# THE FORESTS OF ALBERTA'S SOUTHERN EASTERN SLOPES

# FORESTS OR FORESTRY?

## AN ALBERTA WILDERNESS ASSOCIATION POSITION PAPER

**July 2007**

**August 2010 Update**

Alberta Wilderness Association

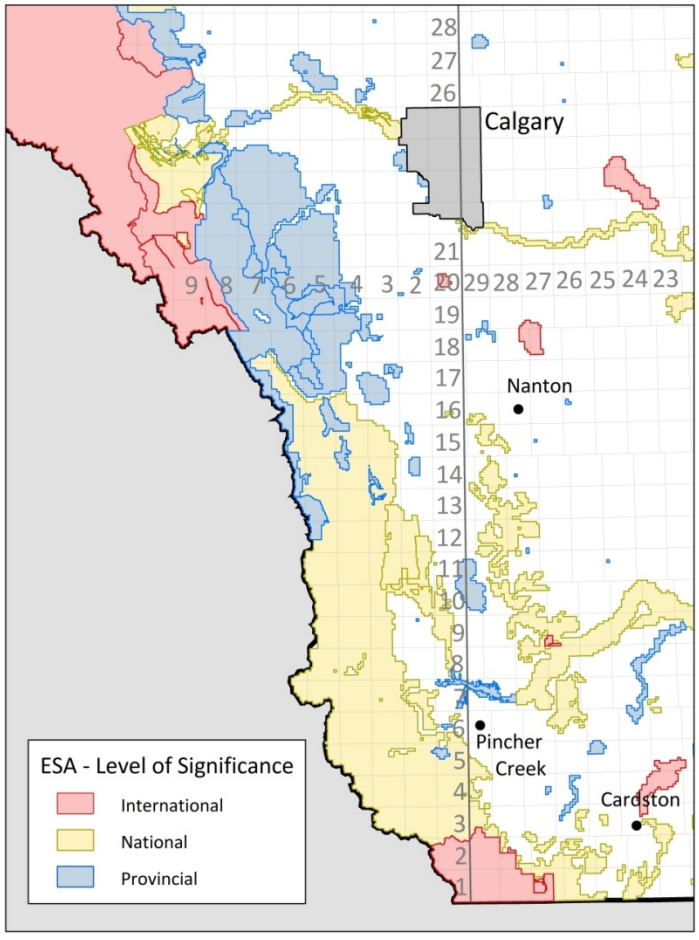

Alberta Wilderness Association

**2010 Update**

This position paper was first published in July 2007. Since then there have been a number of developments which have served to underline the importance of the forests of Alberta's Southern Eastern Slopes for a wide range of values. These developments include:

**Environmentally Significant Areas**

New provincial maps of Environmentally Significant Areas (ESAs), updated in 2009, show a dramatic upgrading in the environmental significance of Alberta's Southern Eastern Slopes forests. The Government of Alberta revised its maps of ESAs throughout the province. Whereas the 1999 ESA maps (shown on page 6 of this report) show small parcels of Alberta's Southern Eastern Slopes forests designated as *Provincially Significant*, the updated 2009 maps designate the entire southern part of the region as *Nationally Significant* with the remainder as *Provincially Significant* . This dramatic upgrade in the significance of these forests recognizes just how ecologically important they are.

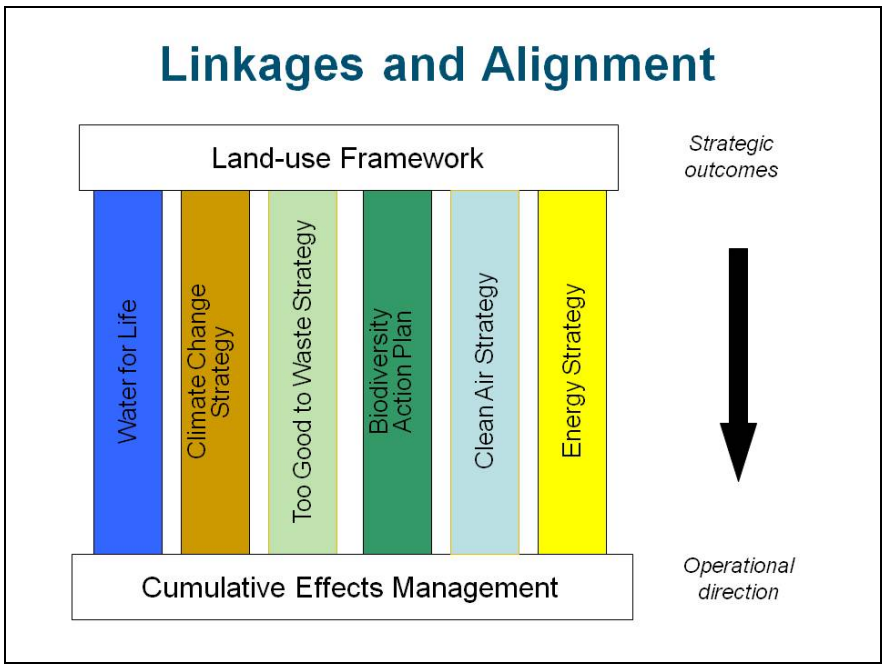



*Alberta's southern Eastern Slopes – Environmentally Significant Areas (Source: Alberta Tourism, Parks and Recreation), July 2009*

**Land-Use Framework**

The Alberta Government's Land-Use Framework has become the province's preeminent planning mechanism. The Alberta government's 2008 *Land-Use Framework* clearly states: "Historically, watershed and recreation were deemed the priority uses of the Eastern Slopes. These priorities should be confirmed, and sooner rather than later."

As part of its implementation of the Land-Use Framework, the Alberta government has committed to developing a Biodiversity Action Plan (see figure below).




*Alberta's Cumulative Effects Management System (Alberta Environment, January 25, 2010).*

A Biodiversity Action Plan will help the province fulfill its international biodiversity commitments. But at the time of this update, AWA is unable to confirm any progress towards completion of such a plan.

When consulted, the Alberta public has been highly supportive of a shift in management emphasis to do a better job of managing the non-timber values of forests. The results of a 2007 public survey, published in the *Land-Use Framework Workbook Summary Report*, contained some surprisingly strong responses from the Alberta public. For example,

- 71.8% of participants would be "willing to accept limits to Forestry development to provide for more Watershed Protection";
- 68.0% of participants would be "willing to accept limits to Forestry development to provide for more Protected Areas";
- 74.3% of participants believed that "at present, the balance between developing and using our land versus conservation of our land is too focused on economic development and growth"; and
- 95% of respondents were *very concerned* or *somewhat concerned* about the "failure to consider the combined (ie cumulative) effects of land use activities."

The LUF divided the province into seven regions, for each of which a Regional Plan will be developed. The forests of the Southern Eastern Slopes fall within the South Saskatchewan Region; one of the first two regions to enter into the planning process. A Regional Advisory Council for the South Saskatchewan Region began meeting in 2009 to draw up its recommendations for a future Regional Plan.

**Oldman River State of the Watershed Report**
The long-awaited sate of the watershed report for the Oldman River basin was released in June 2010. Though the Mountain sub-basin was rated in *good* condition, the report recognized a number of knowledge gaps, including the extent of forest harvest areas, recreation footprint, and biodiversity as an indicator of aquatic ecology.

**C5 Forest Management Plan**
The draft management plan for the C5 Forest (the southern portion of this region – see page 29) received considerable opposition when it was published in 2005, for its emphasis on supplying timber above all other things. In a March 2006 letter to the Alberta government, CROWPAC, the public advisory group for the C5 Forest write: "Our committee believes current cut block maximums coupled with low retained structure have great potential to compromise the ecological and social values inherent in the plan." As a result, the draft plan was suspended by then Minister of Sustainable Resource Development, Ted Morton, "with an eye to shifting priorities to better consider environmental protection" (Calgary Herald, March 13, 2007). Alongside the development of the Land-Use Framework (above) there was considerable optimism that the Alberta government was finally beginning to recognize the importance of managing the forest of the Southern eastern Slopes for more than timber production.

Unfortunately the release in July 2010 of the final C5 *Forest Management Plan 2006- 2026* showed that this optimism was misplaced. Despite the fact that the LUF's South Saskatchewan Regional Advisory Council continued to meet to prepare its recommendations to a final Regional Plan, which would ultimately guide future development in the region, the C5 plan appeared to pre-empt future management options. The proposed 125% "surge cut" was reduced to a 120% "surge cut," but the focus remains very much on delivering a sustained supply of timber, over and above the many other services supplied by a healthy forest.

**Wildlife**
Since this position paper was published in 2007, there have been changes in the designation of some wildlife species.

- **Grizzly Bear**. Grizzly bears were formally declared a provincially *threatened* species in June 2010 (eight years after the province's Endangered Species Conservation Committee first recommended such a designation). This status change was preceded by the publishing of the provincial Grizzly Bear Recovery Plan in 2008. Subsequently, the entire Southern Eastern Slopes area was mapped as *Core Grizzly Conservation Area*, where road densities should not exceed 0.6 km per $km^2$.
- **West Slope Cutthroat Trout**. In 2006, the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recommended that the West Slope cutthroat trout be listed as a *threatened* species.
- **Whitebark Pine** and **Limber Pine**. In 2009, the Alberta government established a Recovery Team to prepare a Recovery Plan for these two species.

**Mountain Pine Beetles**
In November 2009, the Alberta government announced a new joint provincial – federal commitment of $25 million to fight mountain pine beetles in the upcoming year. This added to existing commitments to "bring beetle budget allocations in Alberta to $43 million to date in 2009-10" (Government of Alberta website: www.mpb.alberta.ca).

The "surge cut" in the C5 Forest region is nominally intended to deal with future pine beetle risks, and harvesting sequences in the Spray Lake Sawmills FMA have also been adjusted to deal with the perceived pine beetle threat to timber production.

Alberta Wilderness Association (AWA) remains concerned at the considerable risk that measures adopted to "fix" the perceived mountain pine beetle problem (including expanded clearcut forestry operations) could pose more of a threat to the many values of the forests than the beetles themselves.

**Public Lands Regulations**
Updates to the provisional Public Lands Act were passed in June 2010; revised regulations for this Act are currently under review. AWA is optimistic that changes to the regulations will, amongst other things, reverse the current culture of motorized access onto public land, to ensure that in future motorized access only takes place where there is clear signage to indicate that such activities are allowed.

*Alberta Wilderness Association would like to thank the Wilburforce Foundation for continuing support of our work in the Crown of the Continent region.*

**August 2010**

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**July, 2007**

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# EXECUTIVE SUMMARY

The forests of Alberta's Southern Eastern Slopes are a vital resource for Albertans. They provide clean water for communities across Alberta and Saskatchewan and into Manitoba, recreation opportunities for southern Alberta's burgeoning population, and habitat for a wide range of fish and wildlife species.

The "industrialization" of the forested landscape in Alberta has caused concern for many years, and Albertans feel a growing discomfort with current forest management. We are familiar with the seemingly endless streams of logging trucks heading north on Highway 22 to sawmills in Cochrane. We see large blocks of clearcut forest from twenty years ago that have still not regenerated; small stunted trees seem to be all that the dry, windy conditions of southern Alberta will allow.

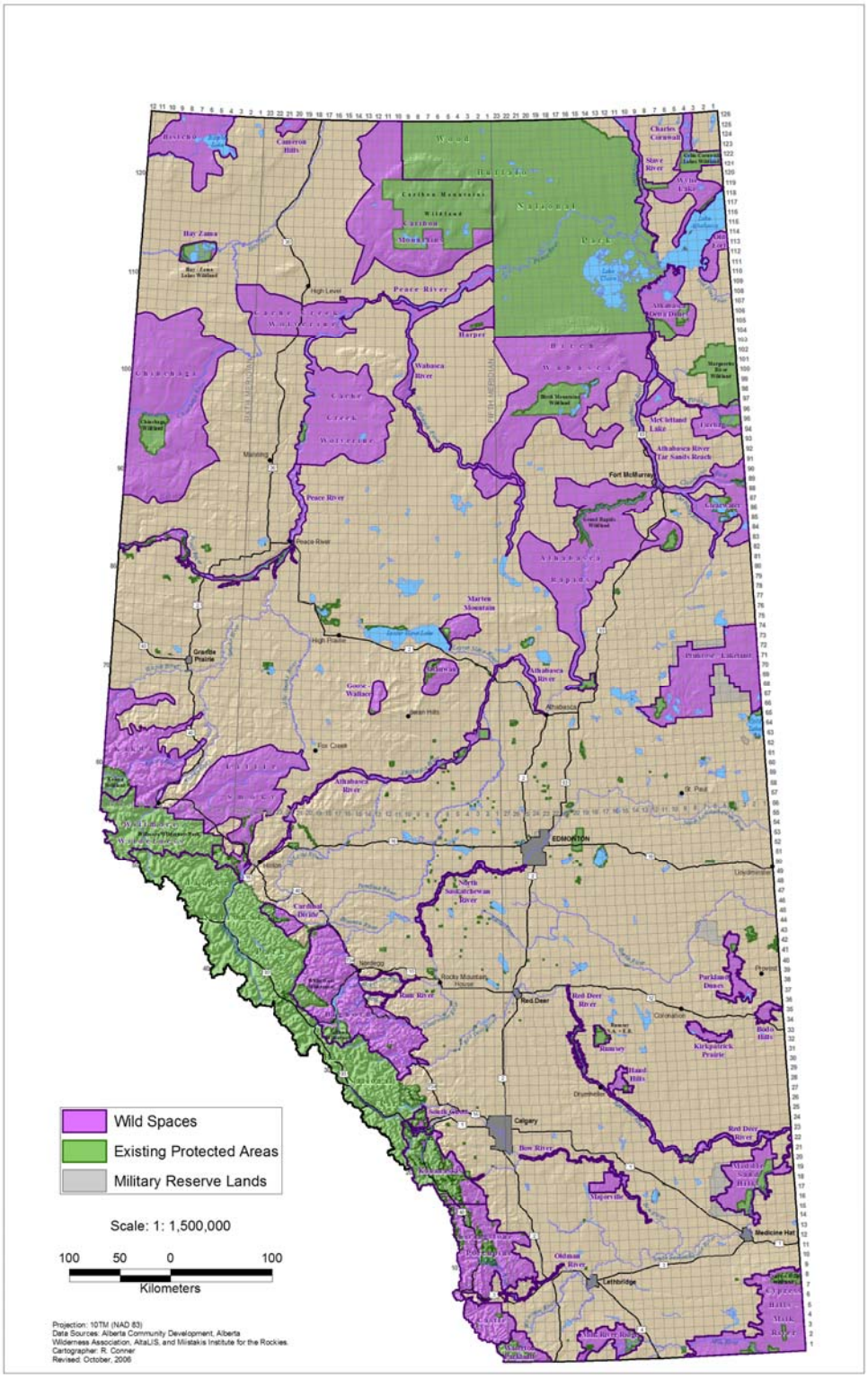
The forests in southern Alberta are managed principally to provide a sustained yield of timber for the forestry industry. Other functions of healthy forests – including watershed and environmental services, recreational opportunities, and wildlife habitat – are managed as secondary concerns.

Alberta Wilderness Association (AWA) is committed to maintaining healthy and intact forest ecosystems that will sustain biological diversity and viable wildlife populations, provide clean drinking water and promote long-term economic opportunities. AWA supports responsible ecosystem-based forest management that does not compromise wildlife and wilderness values. The recommendations of the *Alberta Forest Conservation Strategy Committee* (AFCS), *National Forest Strategy* and *Canada Forest Accord*, including the goals and objectives they articulate, provide a framework for truly sustainable forest management.

We believe Alberta's remaining old growth forests are non-renewable and necessary for the preservation of biological diversity. Water quality and quantity are recognized as key products of all forests and a primary product of the Eastern Slopes watersheds.

We know that healthy and intact forest ecosystems are dependent on eliminating industrial scale clearcut logging (including salvage logging) in the Wild Spaces delineated on AWA's *Wild Alberta* map, in Environmentally Significant Areas (ESAs), and Zones 1 and 2 of the Eastern Slopes - the entire Eastern Slopes south of the Trans Canada Highway.

AWA's Position Paper *The Forests of Alberta's Southern Eastern Slopes Forests or Forestry?* is a working document and emphasizes the need for a full, independent comprehensive review of forestry in southern Alberta. Such a study will examine all aspects of forestry operations, including subsidies to the forestry industry and the costs of fighting forest fires and dealing with forest pests. Studies show that Albertans do not believe industrial forestry should be the principal interest in the southern eastern slopes region. Albertans know economic benefits provided by healthy forests are more important to Alberta's long-term economic and environmental future than industrial scale forestry.




*Map 1. Wild Alberta map, showing Alberta Wilderness Association's Areas of Concern*

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# INTRODUCTION

The forests of Alberta's Southern Eastern Slopes are a vital resource for Albertans. They provide clean water for communities across Alberta and Saskatchewan and into Manitoba, recreation opportunities for southern Alberta's burgeoning population, and habitat for a wide range of fish and wildlife species.

*Forestry activity in the headwaters of the Oldman River*

The "industrialization" of the forested landscape in Alberta has caused concern for many years, and Albertans feel a growing discomfort with current forest management. We are familiar with the seemingly endless streams of logging trucks heading north on Highway 22 to sawmills in Cochrane. We see large blocks of clearcut forest from twenty years ago that have still not regenerated; small stunted trees seem to be all that the dry, windy conditions of southern Alberta will allow. Don Roberts, managing director of CIBC World Markets, recently told a meeting of the Canadian Council of Forest Ministers: "The current model is broken. Fine tuning is not enough – dramatic changes are required … for the forest sector to get back in the game."

Concerns about the industrialization of southern Alberta's forests are in part intuitive: large bare areas of former forest on the steep dry slopes cannot be good for water quality. But how far can we quantify these impacts? Is it possible to put a dollar value on what it is about our forests that is most valuable to us? Traditional economic studies tend to put a false level of importance on factors that are easy to measure. It is relatively simple to measure what industrial forestry practices contribute to the economy in terms of dollars or jobs, but less easy to quantify the value of clean water, peaceful landscapes to hike in, or healthy populations of grizzly bears, or indeed invertebrate species that are of no obvious economic value to humans at all. Factors that are difficult to measure are implicitly considered to be less important when economic costs and benefits are tallied up.

The forests in southern Alberta are still managed principally to provide a sustained yield of timber for the forestry industry. Other functions of healthy forests – including watershed and environmental services, recreational opportunities, and wildlife habitat – are managed as secondary concerns.

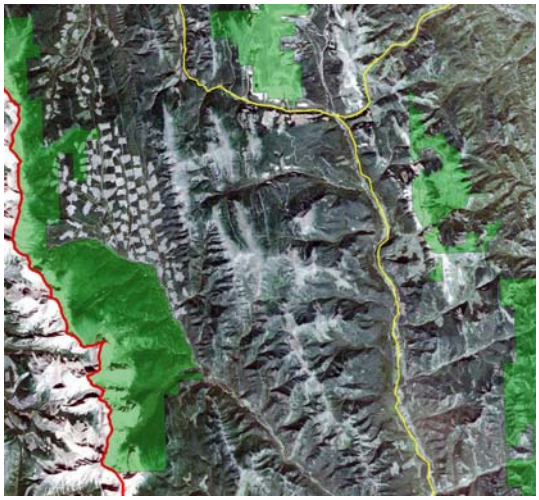
But increasingly, Albertans are making it clear that they are not satisfied with the way our forests are managed. A 2006 poll for the Alberta Forest Products Association found that "82 per cent of 2,881 participants favour an integrated land management approach to Alberta's forests, taking into account environmental, social and economic sustainability.… Asked what issue should receive the greatest attention of Alberta's leaders, 41 per cent said sustainable forest management practices, 17 per cent said intensity of use, and 15 per cent said protection of habitat" (*Edmonton Journal* 2006).

*Logging in Hidden Creek, 2006*

There are considerable limitations to a full economic analysis of the forestry industry in southern Alberta. The economic study of putting a financial value on factors such as clean water or human and ecosystem health is in its infancy. Many people question both the value of trying to put an economic value on such important factors and the implicit suggestion that things are only valuable if they provide a direct dollar value to human beings.

There are also considerable limitations on the availability of information on forestry operations. Information is extremely difficult to obtain from government or industry. When available, government and forestry industry figures can be wildly different and impossible to compare from year to year and from region to region. Alberta's infamously low stumpage fees, for example, represent a "cost" to Alberta's economy in the form of reduced revenue, while they are a "benefit" to forestry companies. It should also be noted that as the forestry industry becomes increasingly dominated by multinational forestry companies, what is economically beneficial to the forestry industry is not necessarily beneficial to Alberta or to Albertans.

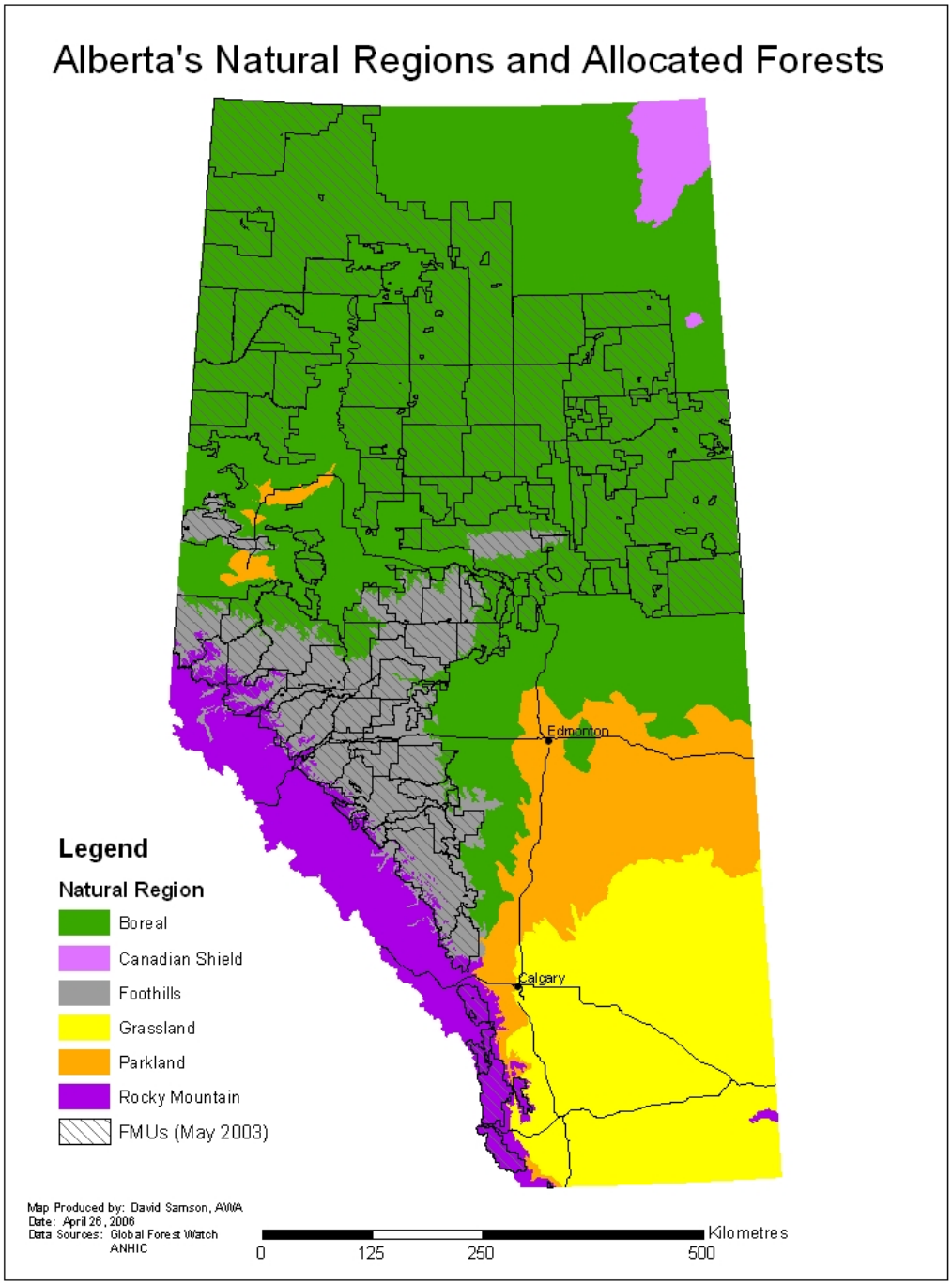
This document is a working paper a basis for future study. Ultimately, a full, independent comprehensive review of forestry in southern Alberta is urgently needed. Such a study must review all aspects of forestry operations, including subsidies to the forestry industry, such as low stumpage fees paid by forestry companies in Alberta compared to other jurisdictions and the costs of fighting forest fires and dealing with forest pests. Should industrial forestry be the principal interest in the region, or are the other economic benefits provided by healthy forests more important to Alberta's long-term economic and environmental future?



*NASA image of the Upper Oldman River. The cutblocks contrast notably with the uncut areas of the Beehive Natural Area to the south. Protected areas are in green.*

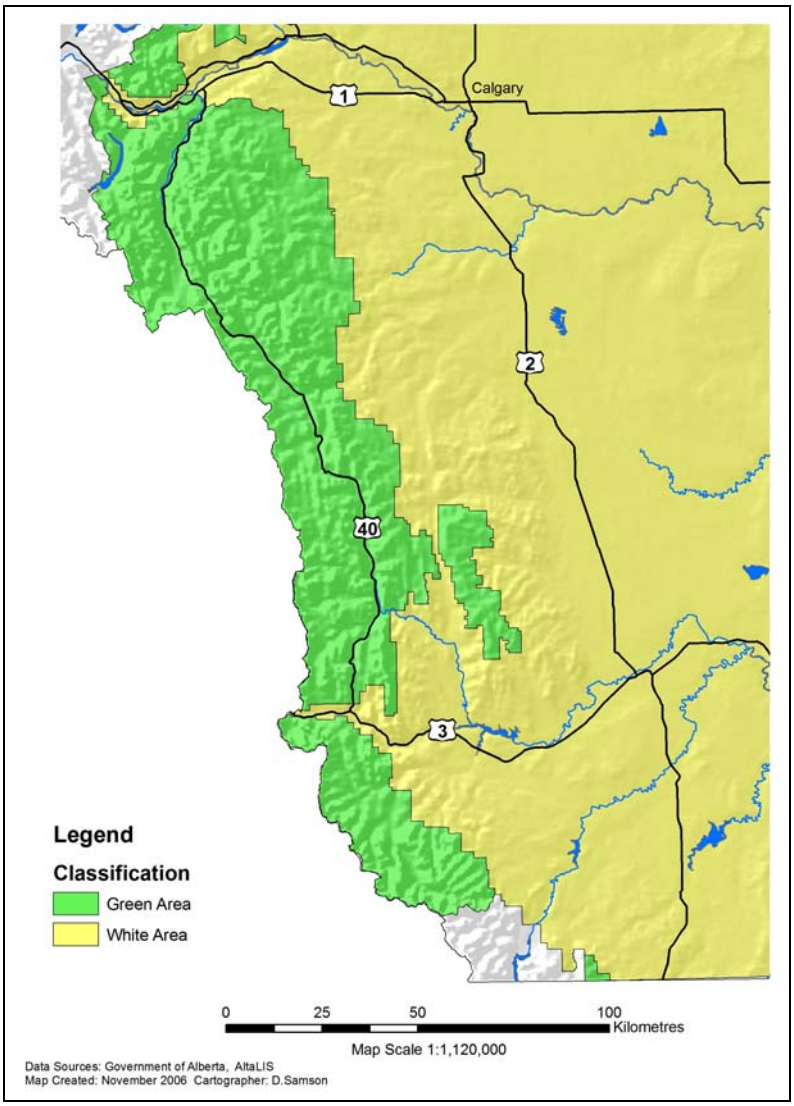
## BACKGROUND

The majority of Canada's forests – approximately 93% – are publicly owned. Some 77% of the nation's forests come under provincial or territorial jurisdiction; the remaining 16% are under federal control. "Under Canada's Constitution, the federal, provincial and territorial governments have specific roles in the care and governance of public forests. They also share responsibility for such matters as environmental regulation and science and technology" (Natural Resources Canada 2006). Some 80% of harvesting in Canada takes place on public land; at the same time, approximately 8% of Canada's forests are legally protected from resource development.




*Map 2. Alberta's natural regions and allocated forests*

In Alberta, forests occur within the Boreal, Rocky Mountain and Foothills Natural Regions. Within the Southern Eastern Slopes region, forests are predominantly on public land. The Green Area of Alberta approximates to forested land; the White Area to the non-forested land.

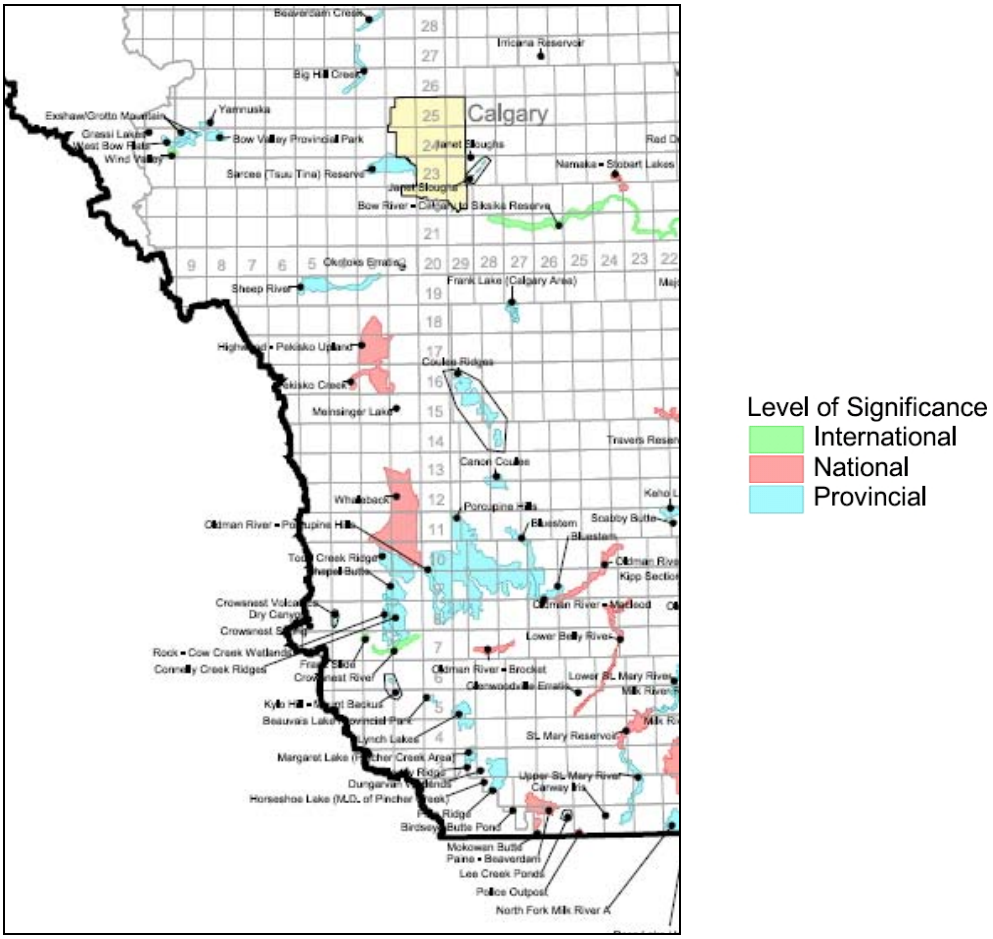



*Map 3. Alberta's Southern Eastern Slopes – Green/White Areas*

Alberta's forests are divided into Forest Management Units (FMUs) for administrative purposes. Some of these forests are then managed under long-term, usually 20-year, Forest Management Agreements (FMAs). Others are managed under shorter-term quota systems.

**Environmentally Significant Areas (ESAs)**

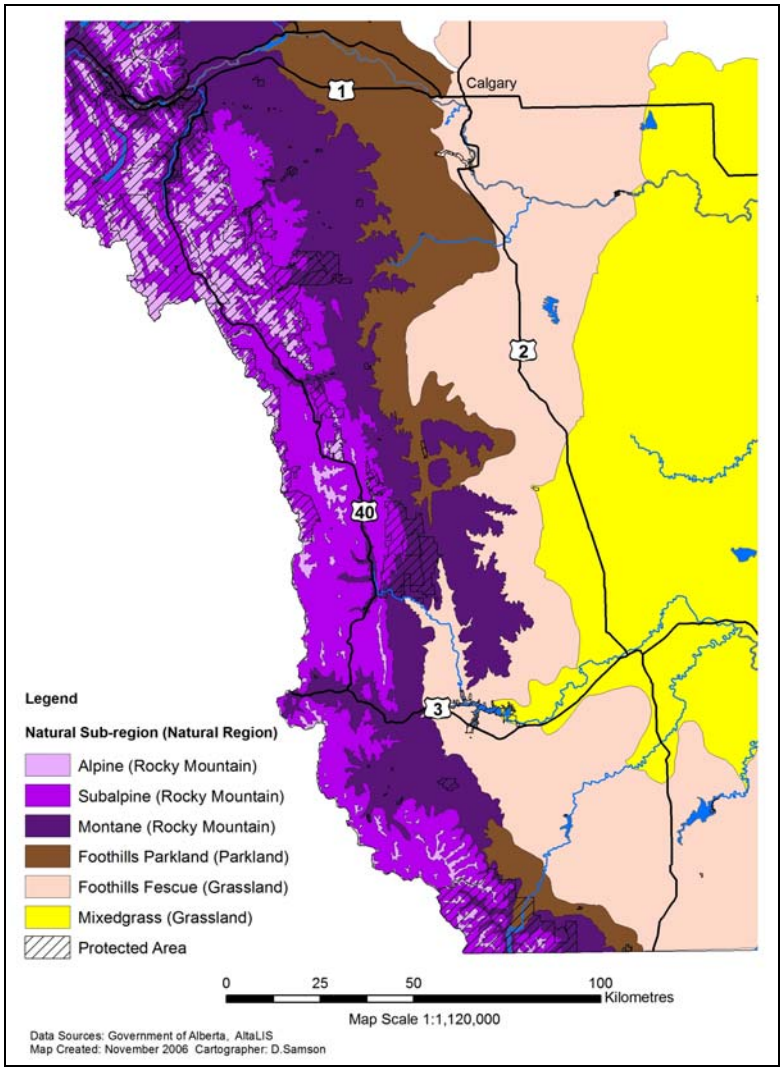
The Southern Eastern Slopes region holds a number of government-identified Environmentally Significant Areas of international, national, provincial, and regional significance. "Environmentally Significant Areas (ESAs) are important, useful and often sensitive features of the landscape. As an integral component of sustainable development strategies, they provide long-term benefits to our society by maintaining ecological processes and by providing useful products. The identification and management of ESAs is a valuable addition to the traditional socio-economic factors which have largely determined land use planning in the past" (Alberta Environmental Protection 1997).




*Map 4. Alberta's Southern Eastern Slopes – Environmentally Significant Areas (Source: Alberta Community Development)*

**Natural Regions and Sub-Regions**

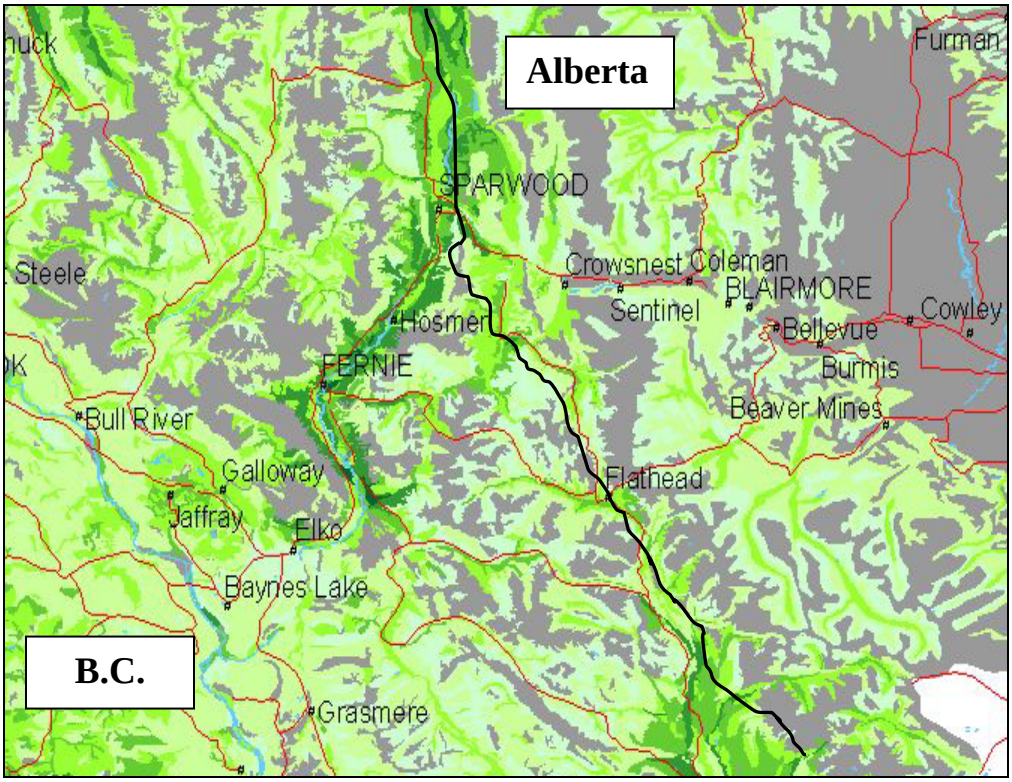
Southern Eastern Slopes forests fall within the Rocky Mountain Natural Region, principally the Subalpine Sub-region. Although provincially the Subalpine Sub-region is quite well protected (52.98% is protected, mostly within the National Parks), south of the Trans-Canada Highway there is relatively little protected land. Most of what is protected falls within Kananaskis Country and Waterton Lakes National Park.




*Map 5. Alberta's Southern Eastern Slopes – Natural Sub-regions and protected areas*

**Forest Soils**

Natural Resources Canada has published detailed maps on its website of soil capability for forestry across Canada. Land is rated according to seven classes, depending on its capability to grow commercial timber. In the Southern Eastern Slopes of Alberta, some lands along the river valleys are classified as having "moderate limitations to the growth of commercial forests." Otherwise, land is classified as having "moderately severe" or "severe" limitations to commercial forestry.

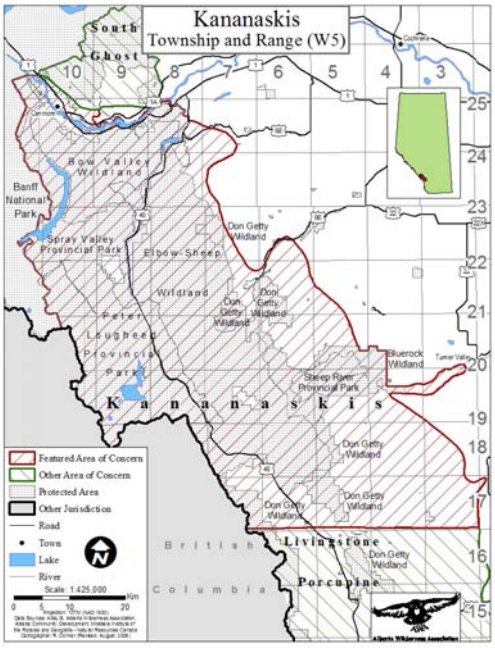



| Class | Description |
|---|---|
| 1 | Lands having no important limitations to the growth of commercial forests. |
| 2 | Lands having very slight limitations to the growth of commercial forests. |
| 3 | Lands having slight limitations to the growth of commercial forests. |
| 4 | Lands having moderate limitations to the growth of commercial forests. |
| 5 | Lands having moderately severe limitations to the growth of commercial forests. |
| 6 | Lands having severe limitations to the growth of commercial forests. |
| 7 | Lands having severe limitations which preclude the growth of commercial forests. |

*Map 6. Land Capability for forestry*

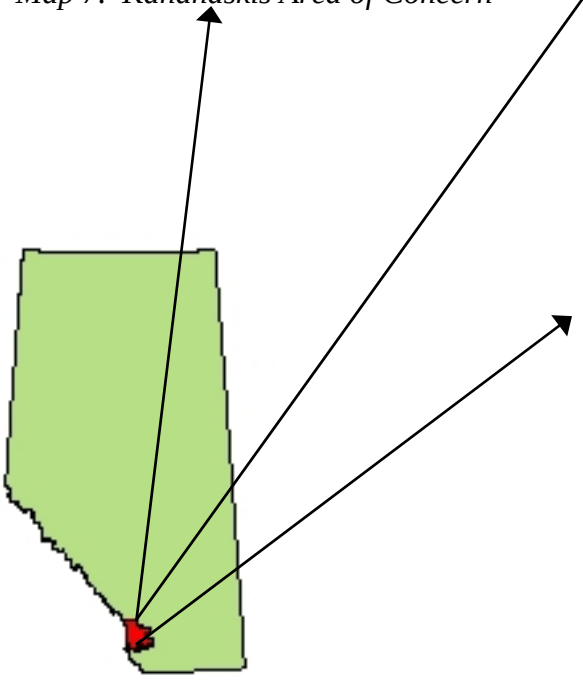
## AWA Areas of Concern

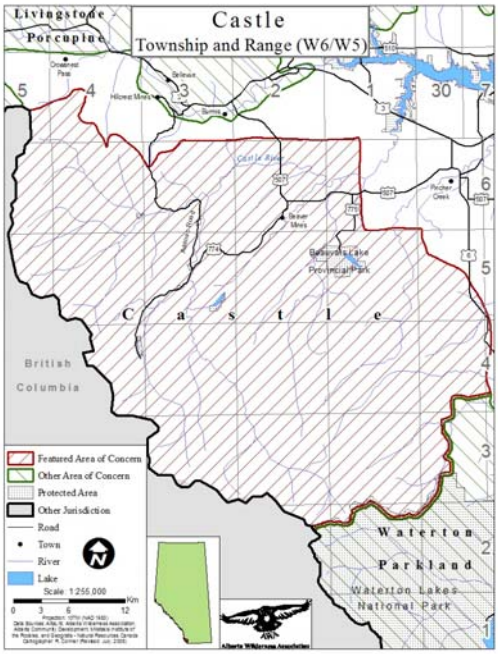
Within the Southern Eastern Slopes region, AWA has three designated Areas of Concern: Kananaskis, Livingstone-Porcupine, and Castle.




*Map 7. Kananaskis Area of Concern*


*Map 8. Livingstone-Porcupine Area of Concern*






*Map 9. Castle Area of Concern*

# 1. VALUES OF SOUTHERN EASTERN SLOPES FORESTS

The forests, rivers, and mountains of Alberta's Southern Eastern Slopes are home to a diverse array of wildlife. Grizzly bears, cougars, wolverines, and moose call the region home. The remaining fragments of old-growth forest support specialized species such as northern flying squirrel and three-toed woodpecker, which are almost entirely reliant on this disappearing habitat. The mountains represent a "migration highway" for a number of species, most notably golden eagles; four to six thousand of these spectacular birds are known to travel this route in spring and fall every year. Threatened cutthroat trout and bull trout spawn in the rivers and streams. Plant life includes everything from the thousand-year-old limber pines of the Montane Sub-region to the fragile and specialized alpine plants and wetland specialists growing in the riparian areas.

At the same time, the region's natural values are crucially important to people. The mountains and foothills are the sole water source for populations across southern Alberta, Saskatchewan, and Manitoba and an important store of atmospheric carbon. They are also the playground for a growing population in southern Alberta, offering a range of recreation opportunities, including hiking, backpacking, hunting, fishing, and motorized recreation**.**

Healthy forests are of tremendous value to society, not just because of the contribution to the economy made by forestry operations, but for a whole range of other factors. Forests provide clean water and store water during periods of high precipitation, to be released slowly during drier periods. They sequester carbon from the atmosphere and provide habitat for fish and wildlife, and recreational opportunities for people. As Alberta's population continues to expand, the demand for clean water and recreational opportunities can only increase.

*Sheep River, 2006*

In their 2006 report "Counting Canada's Natural Capital: Assessing the Real Value of Canada's Boreal Ecosystems," Anielski and Wilson estimate the "non-market" and "market" values of Canada's boreal forest. They estimate that in 2002, the non-market value of the boreal was 2.5 times the market value ($93.2 billion and $37.8 billion, respectively). Though referring to the boreal forest specifically, this does give some indication of the potential scale of the non-forestry values of the Southern Eastern Slopes, values that are very likely considerably higher, given the proximity of these forests to major urban centres and highways frequented by visitors to Alberta.

## 1.1 WATERSHED VALUE

"*It has been said that one of the primary aims of all National Forests is the production, in perpetuity, of a supply of timber. In mountainous regions the use of the forest may, by necessity, be subservient to another use – that of watershed protection*" (Dominion of Canada 1927).

*Cutblocks in the headwaters of the Highwood River*

When tree cover is removed, rainfall hits the ground directly and runs quickly into nearby streams. This results in increased sediment-loading in the water, which can have negative impacts on aquatic animals, and also higher peak flows and reduced flows during dry periods, increasing the chances of floods and droughts. In the 2006 draft Detailed Forest Management Plan for Spray Lake Sawmills' Forest Management Agreement, University of Alberta forest hydrologist Uldis Silins suggests that clearcut forestry can increase the total volume of water in rivers. But, as suggested by the City of Calgary Waterworks in its feedback on the draft plan, this does not account for seasonal flow. Any increase in total flow is likely to take place during wet periods, while flow during dry periods may be reduced, with important implications for downstream users.

Foster, Beall and Kreutzweiser (2005) predict that "the global economy, quality of life and cultural identity are highly dependent on forested watersheds and water resources. As a result of expanding human activity there will be an increased global demand for forests to provide clean water for a multiplicity of purposes, including agriculture, fisheries and recreation."

Although Alberta's commitment to watershed protection is not as strong as it was when management of forest resources was assumed by the provinces in 1930, Albertans have become increasingly aware of the importance of water quality and quantity in our province. The 2003 Water for Life Strategy committed to ensuring "healthy, sustainable ecosystems (e.g., watershed, rivers, streams, lakes and groundwater)" (*Government of Alberta, 2002*).

Some attempts have been made in recent years to put an economic value on clean water. In a recent presentation to the Bow River Basin Council (March 8, 2006), Mark Haxby (Alberta Economic Development) and Bob Prather (Alberta Agriculture, Food and Rural Development) presented a paper entitled "The Value of Water to the Alberta Economy" (2003). Their list of uses of water comprises the following:

- Agricultural use (crops, livestock, greenhouse and aquaculture)
- Commercial fisheries
- Domestic use
- Commercial use
- Industrial use
- Mining, mineral and petroleum
- Electricity generation
- Recreational activities
- Ecosystem service values (including drought recovery, habitat, biological diversity maintenance, wastewater disposal)

Their study also discusses the importance of "existence value," or "the value that people place on simply knowing that something exists, even if they will never see it or use it."

The Haxby and Prather study provides some *preliminary* figures for annual values of water uses in the South Saskatchewan River Basin.

| | |
|---|---|
| • Agriculture: | $203,730,160 |
| • Domestic: | 435,271,170 |
| • Commercial: | 41,319,040 |
| • Industrial: | 43,537,840 |
| • Hydroelectric: | 38,380,000 |
| • Thermal electricity: | 77,635,800 |
| • Mining, mineral, petroleum: | 25,053,990 |
| • Recreational fishing: | 15,444,030 |
| • Passive uses: | 79,268,540 |
| *Total:* | *959,640,540* |

**Table 1.** Values of water uses in the South Saskatchewan River Basin

Haxby and Prather emphasize that these figures should not be used in isolation: ecosystem and social values would require a separate study. Their study refers to "active" use of water (e.g., industrial, agricultural, and recreational use, as well as biological/ecosystem support) and "passive" use (e.g., natural habitat, endangered species, aesthetics). The "tangibility" of value to users decreases from active to passive uses.

It is difficult, though, to provide a direct economic correlation between industrial forest and degraded water. If clean water is worth a certain dollar figure to the Alberta economy, then how much is sediment-laden or polluted water worth? And when low flows do occur, what are the real costs to *all* users?

### 1.2 GROUNDWATER

Studies on the economic values of water generally seem to concentrate on surface water. Although surprisingly little is known about groundwater in Alberta, our forested water catchment areas in the mountains and foothills undoubtedly play a huge but immeasurable role in maintaining the quality of the water that recharges the underground aquifers upon which so many Alberta communities depend. What part forests play in this process is also unclear: we do not know whether clearcut forest practices allow more water to flow from the surface into rivers and thus reduce the amount of water recharging underground aquifers. In March 2006, Alberta Environment committed to a two-year program to map groundwater resources in Alberta (Alberta Environment 2006).

### 1.3 WILDLIFE AND FISH

Southern Alberta's forests are valuable as habitat for a diverse array of wildlife and fish species. Some of these provide a direct economic benefit through utilization (e.g., hunting and fishing). Others make an indirect contribution through tourism, wildlife watching, and so on (e.g., grizzly bears are used extensively to attract visitors to the region). There is a tendency to put an increased value on wildlife that are used or exploited by people (fish, wildfowl, animals that are hunted), so it is important to guard against putting no economic value on species that we do not "use." Does biodiversity itself have an economic value?

Alberta Environment estimated that in 1996 Canadians spent the following on wildlife-related activities:

| Activity | $$ spent in Canada | $$ spent by Albertan participants (per year) |
|---|---|---|
| Wildlife viewing | $1.3 billion | $433 |
| Recreational fishing | $1.9 billion | $402 |
| Hunting wildlife | $823.8 million | $843 |

***Table 2**. Spending by Canadians on wildlife-related activities (Alberta Environment 1996)*

The value of wildlife is, of course, not purely economic. Forests in the Southern Eastern Slopes region support a range of wildlife. In a report entitled "The General Status of Alberta Wild Species," Alberta Fish and Wildlife classify wildlife according to status, such as At Risk, Sensitive, and Secure. The Southern Eastern Slopes are home to many of these species: the following species are listed as "At Risk" (defined as "any species known to be 'At Risk' after formal detailed status assessment and designation as 'Endangered' or 'Threatened' in Alberta") or "Sensitive" ("any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk.").

| | | |
|---|---|---|
| **Birds** | | |
| Pied-billed grebe | *Podilymbus podiceps* | Sensitive |
| Trumpeter swan | *Cygnus buccinator* | At Risk |
| Great blue heron | *Ardea herodias* | Sensitive |
| Ferruginous hawk | *Buteo regalis* | At Risk |
| Peregrine falcon | *Falco peregrinus* | At Risk |
| Prairie falcon | *Falco mexicanus* | Sensitive |
| Osprey | *Pandion haliaetus* | Sensitive |
| Bald eagle | *Haliaeetus leucocephalus* | Sensitive |
| Golden eagle | *Aquila chrysaetos* | Sensitive |
| Northern goshawk | *Accipiter gentilis* | Sensitive |
| Sandhill crane | *Grus canadensis* | Sensitive |
| Sharp-tailed grouse | *Tympanuchus phasianellus* | Sensitive |
| Black tern | *Chlidonias niger* | Sensitive |
| Barred owl | *Strix varia* | Sensitive |
| Great grey owl | *Strix nebulosa* | Sensitive |
| Northern pygmy owl | *Glaucidium gnoma* | Sensitive |
| Common nighthawk | *Chordeiles minor* | Sensitive |
| Black-backed woodpecker | *Picoides arcticus* | Sensitive |
| Pileated woodpecker | *Dryocopus pileatus* | Sensitive |
| Sedge wren | *Cistothorus platensis* | Sensitive |
| Western tanager | *Piranga ludoviciana* | Sensitive |
| Brewer's sparrow | *Spizella breweri* | Sensitive |
| **Mammals** | | |
| Grizzly bear | *Ursus arctos* | May Be At Risk |
| Wolverine | *Gulo gulo* | May Be At Risk |
| Long-tailed weasel | *Mustela frenata* | May Be At Risk |
| Fisher | *Martes pennanti* | Sensitive |
| Mountain lion/Cougar | *Felis concolor* | Sensitive |
| Bobcat | *Lynx rufus* | Sensitive |
| Canada lynx | *Lynx canadensis* | Sensitive |
| Red-tailed chipmunk | *Tamias ruficaudus* | Sensitive |

***Table 3**. Status of wildlife in Alberta's Southern Eastern Slopes* (Source: Alberta Sustainable Resource Development, 2003)

| | | |
|---|---|---|
| **Amphibians** | | |
| Northern leopard frog | *Rana pipiens* | At Risk |
| Canadian toad | *Bufo hemiophrys* | May Be At Risk |
| Columbia spotted frog | *Rana luteiventris* | Sensitive |
| **Fish** | | |
| Bull trout | *Salvelinus confluentus* | Sensitive |
| **Butterflies** | | |
| Lorquin's admiral | *Limenitis weidemeyerii* | May Be At Risk |
| Mountain fritillary | *Boloria napaea* | Sensitive |

***Table 3**. Status of wildlife in Alberta's Southern Eastern Slopes (Contd.)*

Old-growth forests in particular tend to be relatively species-diverse, and indeed some species, such as pileated and three-toed woodpecker, rely primarily on these forests. Other species, such as northern flying squirrel, show a distinct preference for older structure forests.

*Pileated woodpecker – an old-growth-dependent species*

The Southern Eastern Slopes region also supports a number of rare plant species, including ponderosa pine, western white pine, and western red cedar.

## 1.4 RECREATION AND TOURISM

In the report "RecFacts 610: Economic Benefits of Recreation," Alberta Community Development (2006a) states that "recreation has many economic benefits. You get far more than you pay for. Whether you're looking at reducing health care costs … or attracting businesses and tourists to your community, recreation opportunities contribute to the economic vitality of your community!"

In the 2004 Alberta Recreation Survey, 89.1% of Albertans considered the statement "Recreation and parks contribute to the economy of a community" as "very important," "important," or "somewhat important" (Alberta Community Development 2004). With a growing population, demand for recreational opportunities in southern Alberta is only likely to increase in the foreseeable future.

*Hikers in the Whaleback*

On a national level, Environment Canada estimated that in 1996, residents of Canada spent $11 billion on a variety of nature-related activities within Canada. "They made trip-related expenditures for transportation, accommodation and food. They also purchased equipment, supplies and other items needed to pursue nature-related activities, such as camping gear, outdoor clothing, boats, trucks, hunting and fishing equipment and supplies, license and entry fees, cameras and binoculars. Other examples of expenditures for nature-related activities are membership fees or donations to nature-related organizations, costs to maintain land for conservation and purchase of feeders and feed for wildlife" (Environment Canada 1996).

| Category of expenditure | Outdoor activities in natural areas | | Wildlife viewing | | Recreational fishing | | Hunting wildlife | | Other nature-related activites |
|---|---|---|---|---|---|---|---|---|---|
| | $ million | % | $ million | % | $ million | % | $ million | % | $ million |
| Accommodation | 1,133.9 | 15.6 | 65.7 | 5.0 | 157.5 | 8.1 | 39.0 | 4.7 | |
| Transportation | 1,884.8 | 26.0 | 155.6 | 12.0 | 363.5 | 18.8 | 166.5 | 20.2 | |
| Food | 1,565.9 | 21.6 | 100.0 | 7.7 | 244.7 | 12.6 | 99.4 | 12.1 | |
| Equipment | 2,213.5 | 30.5 | 708.3 | 54.4 | 932.5 | 48.2 | 382.9 | 46.5 | |
| Other items | 448.6 | 6.2 | 272.2 | 20.9 | 236.7 | 12.2 | 136.1 | 16.5 | |
| Costs for other nature-related activities | | | | | | | | | 1,224.9 |
| Total | 7,246.7 | 100.0 | 1,301.8 | 100.0 | 1,934.9 | 100.0 | 823.8 | 100.0 | 1,224.9 |
| Average yearly | $704 | | $297 | | $462 | | $692 | | |
| Average daily | $44 | | $17 | | $27 | | $41 | | |

***Table 4****. Expenditures on nature-related activities in Canada, in 1996, by type of activity (Environment Canada, 1996)*

According to the Alberta government, visitors to Alberta's parks spend $1.1 billion every year. This is estimated to sustain 23,480 person-years of employment (*Alberta Community Development, 2006*).

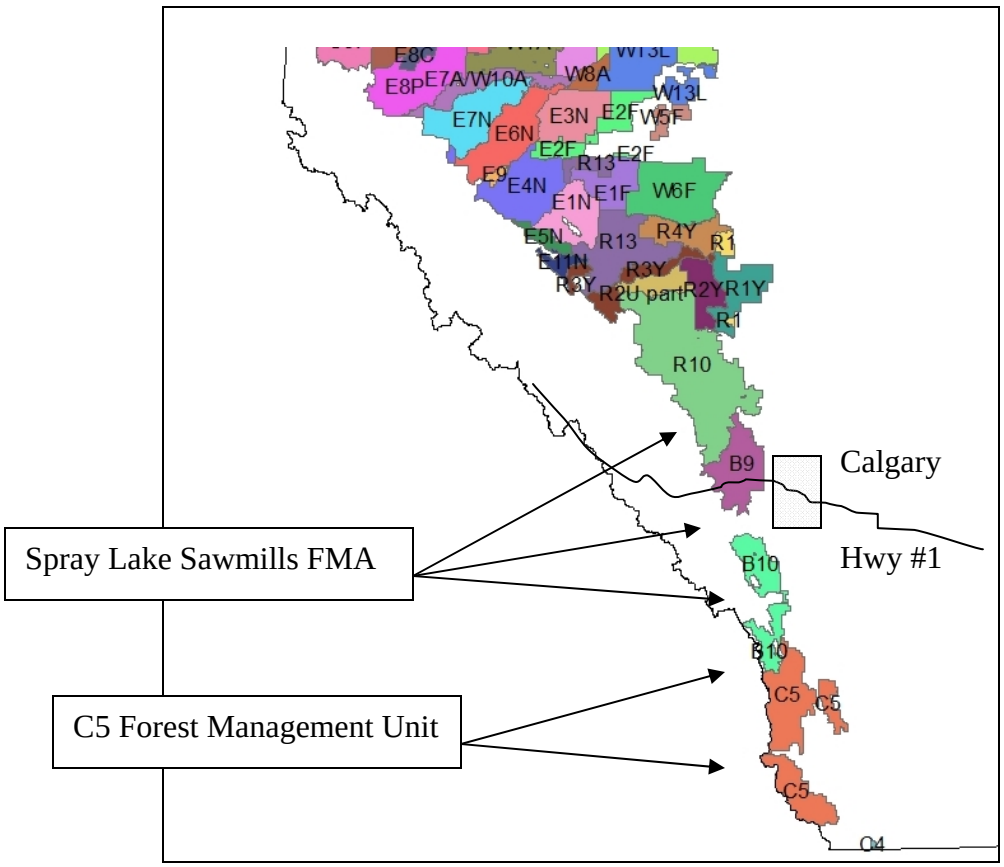
## 1.5 CARBON STORAGE

Canada's boreal forest is part of the world's largest terrestrial carbon storehouse, storing approximately 67 billion tonnes of carbon; the value of its carbon sequestration services is estimated at $1.85 billion per year. The Pembina Institute proposes that the economic value of non-marketable services provided by the boreal region is $93.2 billion per year, which compares to a net market value of resource extraction activities of $37.8 billion (all figures from Anielski and Wilson 2006). Although this refers specifically to the boreal forest, it is an indication, possibly an underestimate, of the value of the forests of southern Alberta for non-timber-extraction purposes.

# 2. CURRENT FOREST MANAGEMENT IN SOUTHERN ALBERTA

## 2.1 BACKGROUND

The provincial *Forests Act* (1994) provides the legal framework for management of forests in Alberta. It defines the basic rules governing forest tenure and provides the Minister and Cabinet with the power to set policies and regulations governing logging methods, wood utilization standards, and broader issues concerning use of forest land. The *Act* itself provides minimal guidance as to how the forests should be managed, except that the harvesting of timber should be designed to provide a perpetual sustained yield.




*Map 10. Southern Alberta forestry allocations (Global Forest Watch 2000)*

The majority of Alberta's allocated forests are managed under long-term (usually 20-year) Forest Management Agreements (FMAs). The northern part of the study area falls within Spray Lake Sawmills' FMA. The southern part of the region lies within the C5 Forest Management Unit (FMU) (see Map 8).

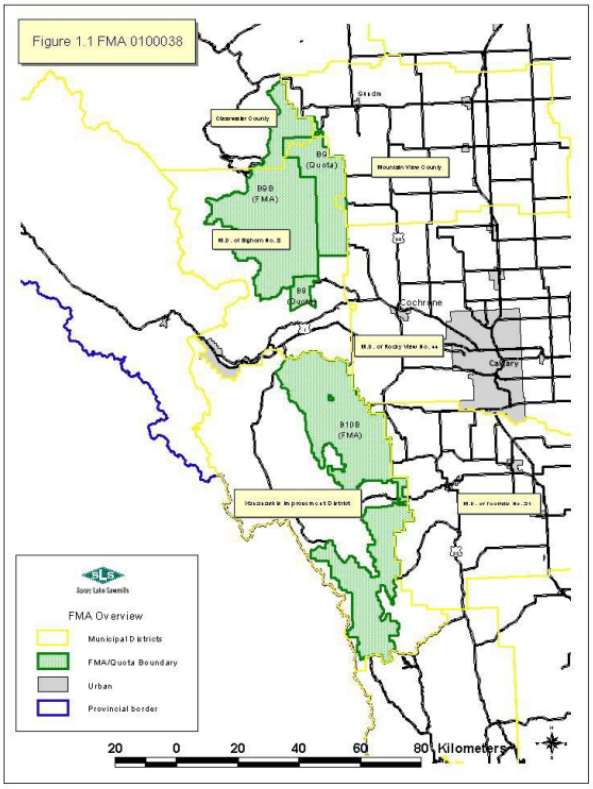
FMAs allow for more independent planning by the forestry company. Under the FMU/quota system, "the Province is responsible for most of the planning for the area. The company is required to submit annual operating plans and general development plans" (*Alberta Sustainable Resource Development, n.d.*). In its draft Forest Management Plan for the C5 Forest Management Unit, the Alberta government states that "the calculation of an annual allowable cut is a key component of a forest management plan. Such plans are prepared by companies where FMAs exist, and by the Public Lands and Forests Division of ASRD where provincial forested lands do not fall within an FMA"

"Forest Management Agreements require the company to be much more involved in all aspects of forest management. Unlike timber quotas or timber permits, Forest Management Agreements require long-term forest management planning and public consultation by the companies. The FMA holder takes the lead in planning and works with any quota holder or permit holder within their FMA" (Alberta Sustainable Resource Development, 2005b).

### 2.1.1 Spray Lake Sawmills Forest Management Agreement

The area from the Trans-Canada Highway south to southern Kananaskis is part of the Spray Lake Sawmills (SLS) Forest Management Agreement (FMA; see Map 3). This 20-year FMA was signed in July 2001 and covers 337,448 hectares (approximately 40% of which is north of the Trans-Canada Highway).

The FMA allows SLS to manufacture 90 million board-feet of lumber, wood chips, and other products annually. It also states that the primary use of the forest management area is "to establish, grow, harvest and remove timber" (Spray Lake Sawmills, 2006).




*Map 11: Spray Lake Sawmills Forest Management Agreement (Spray Lake Sawmills, 2006)*

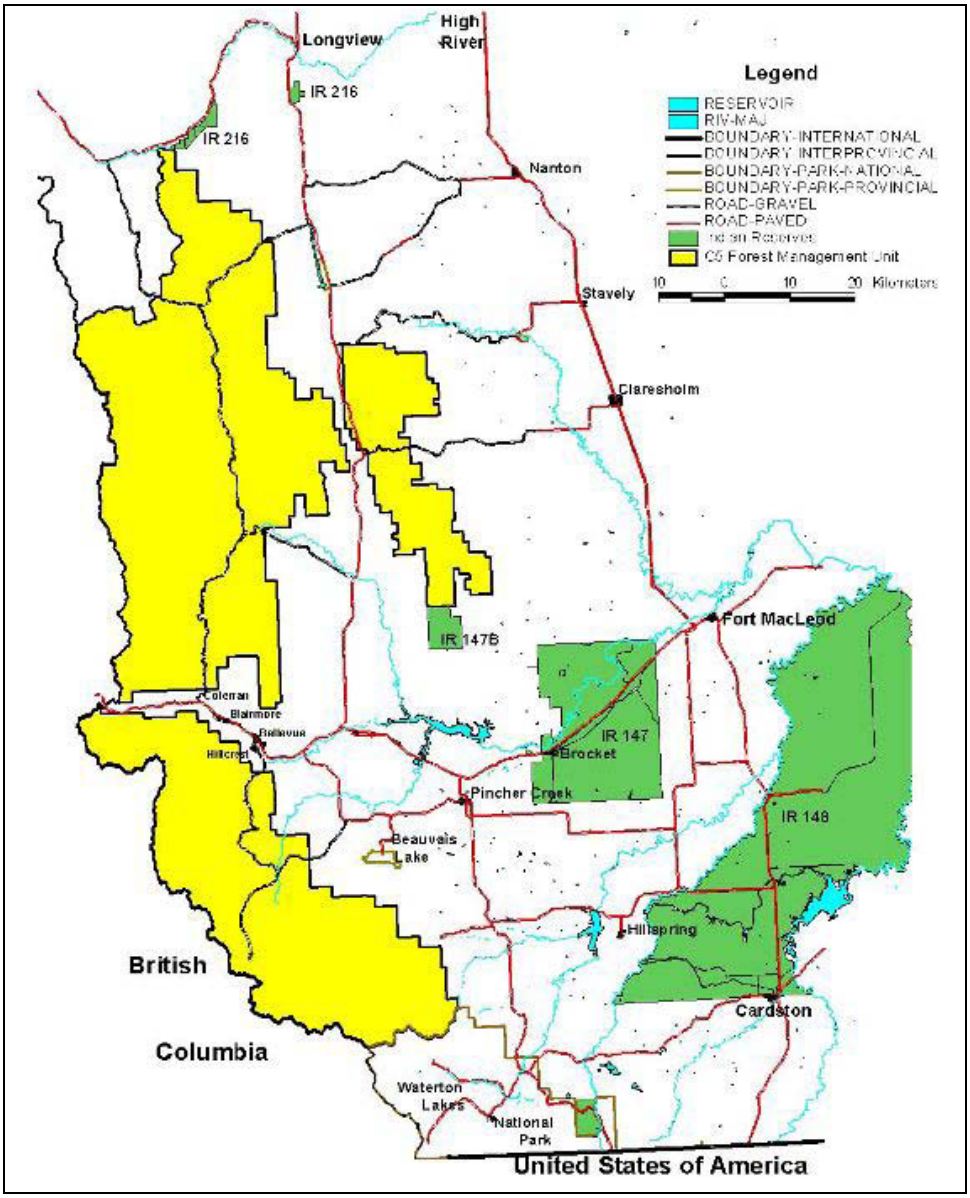
The Spray Lake Sawmills FMA was signed in 2001, and a draft Detailed Forest Management Plan was released in May 2006. The draft plan met with considerable public opposition and has not yet been implemented at the time of writing.

### 2.1.2 C5 Forest Management Unit

The C5 Forest Management Unit (see Map 10) is located in southwestern Alberta, stretching from south of Kananaskis Country to Waterton Lakes National Park. It encompasses approximately 352,200 hectares of public land and borders the Spray Lake FMA. Spray Lake Sawmills owns 88% of the quota for the C5 region. The remaining 12% is held by three other operators (770538 Alberta Ltd., 848507 Alberta Ltd., Community Timber Permit Program).

In late 2005, the draft C5 Forest Management Plan was produced to outline management of the forested land base for the next 20 years (*Alberta Sustainable Resource Development 2005b*). The draft plan underwent a period of public comment, and was temporarily suspended by the Minister of Sustainable Resource Development in March 2007, pending the findings of a watershed review by the Oldman Watershed Council.

AWA has a number of concerns about the draft plan and its emphasis on managing the forest "in a manner that supports opportunities to sustain or enhance forest productivity" and to "maintain or increase the net forest (commercial timber harvesting) land base in the C5 FMU."




*Map 12: C5 Forest Management Unit (Alberta Sustainable Resource Development 2005b*)

## 2.2 Economic Benefits of Current Forest Use

It is extremely difficult to get an accurate picture of the contribution of industrial forestry in southern Alberta to the economy. Provincial forest managers do not make this information readily available. Economic information is often derived from forestry industry sources, in whose interests it is clearly important to maximize the financial importance of forestry operations.

In 2004, timber royalties and fees accounted for $163 million in revenue in Alberta, up from $116 million in 2003 (*National Forestry Database Program, 2006*). This compares to annual revenue for the forestry industry of $8.4 billion in the primary forestry sector and $3.2 billion in secondary manufacturing (Alberta Forest Products Association 2001).

Province-wide, an estimated 54,000 Albertans are employed in the forest industry (Alberta Tomorrow 2006).

According to the Alberta Forest Products Association (Granson 2005), in "Calgary and Southern Alberta" (not defined), revenue from the forestry industry ("direct" and "indirect and induced") was $3.2 billion in 2004.

**Spray Lake Forest Management Agreement (FMA)**
Figures for the C5 Forest Management Unit are particularly difficult to find, but it is possible to obtain a rough estimate of the contribution of the Spray Lake FMA to the province.

In Spray Lake Sawmills 2001 FMA, the "holding charges and forest protection charges" were set at $0.15 per cubic metre of the Annual Allowable Cut (AAC), with charges to be adjusted annually. This fee rises to $0.20 per cubic metre in 2006 and subsequently, "for the years 2007 to 2011, the holding charges and forest protection charges will be increased by $0.13 per cubic metre of the annual allowable cut" (Government of Alberta 2001).

The Northern Alberta Development Committee (2004) lists the AAC for Spray Lake Sawmills' FMA at 208,624 cubic metres. At the 2006 figure of $0.20 per cubic metre, this would equate to an annual charge by the province of $41,724. Spray Lake Sawmills employs an estimated 200 people (Gailus 2006).

## 2.3 Economic Costs of Current Forest Use

### 2.3.1 Wildfire Management

Many years of fire suppression have ironically encouraged the development of dense stands of closely packed single tree species that are very susceptible to fire. On a year-by-year basis, substantial resources are spent on maintaining a "stand-by" staff of fire watchers and fire fighters

to be able to respond quickly to any fire outbreak. Though difficult to quantify, this is another economic cost of industrial forestry: forestry practices that help to maximize the risk of wildfire.

There is a question as to whether thinning of forests is an effective way to prevent fires. A November 2006 article in the *New York Times* cites two reports which suggest that "thinning forests without also burning accumulated brush and deadwood may increase forest fire damage rather than reduce it" (*Robbins, 2006*). The reports, published in late 2005 in the *Canadian Journal of Forest Research*, study two recent fires – a 500,000-acre wildfire in Oregon and the Hayman fire in Colorado. "In forests that have been thinned but not treated with prescribed burning, tree mortality is much greater than in forests that have had thinning and burning and those that have been left alone" (Raymond and Peterson 2005)

Provincially, the Annual Report for Sustainable Resource Development states: "The expenditures for the Wildfire Management Core Business were $197.0 million in 2004-05.... The 2004-05 expenditures were nearly $11.0 million lower than the expenditures in 2003-04 ($207.7 million)" (Alberta Sustainable Resource Development 2005a).

*Lost Creek fire site in 2006. The 2003 fire burned approximately 21,000 hectares of forest.*

A 2001 document from Alberta Sustainable Resource Development, *Wildfire Management in Alberta*, provides some interesting provincial figures on the costs of fire-fighting. In 2000, there was a "staff complement of 760, within Land and Forest Service, annual base budget of $38 million, 200 weather stations, and 2,350 contract firefighters available." The air tanker cost is set at $12,000 for each fly-past and helicopters at $1,250 an hour, "not to mention the ground crew's payroll." Purchasing new supplies is an important function of the "central warehouse," with spending totalling between $12 million in a severe fire year such as 1998 and $3 million in a more "normal" season (Alberta Sustainable Resource Development 2001).

The 2003 Lost Creek fire received a great deal of publicity at the time. Following the fire, the Minister for Sustainable Resource Development requested a further $113 million in "protection costs" (*Alberta Hansard, 2003*). The MD of Crowsnest Pass also spent an estimated $1 million fighting the fire (Municipality of Crowsnest Pass 2003).

Of course fires would still have to be fought, to a lesser degree, in the absence of forestry operations.

### 2.3.2 Pine Beetle Management

As is the case with increased risk of wildfire, industrial management practices for large single-species stands of forest have also increased the risks of mountain pine beetle infestations. Part of the justification for proposals to increase the Annual Allowable Cut in the C5 Management region (the proposed "surge cut") is to reduce the burden of large stands of lodgepole pine.

Previous industrial forest management has helped to create present-day problems. The high-profile war on pine beetles comes with a considerable financial cost, including fire watches, eradication cuts, and controlled burns. In the short term, this may represent a temporary economic boon to forestry companies, such as the "surge cut" called for in the draft C5 Forest Management Plan, but this is clearly not sustainable.

An important element of the concern about the Alberta government's dramatic response to the pine beetle threat is that there is little evidence that it will work. Similar responses in British Columbia did little more than delay the advance of beetles. There is even evidence that clearcut forestry practices, which are being adopted in Alberta to deal with the beetle threat, may facilitate the dispersal of beetles.

In 2005/06, the Alberta government spent $10 million in pine beetle control programs. The projected budget for 2006/07 is "a little more than $22 million" (Alberta Sustainable Resource Development 2006).

### 2.3.3 Water

Healthy forest systems filter rain water slowly, through tree and understorey foliage, and through plants, mosses, and organic soils. Water is absorbed into the soils and released slowly into creeks and rivers over days or even months.

When tree cover is removed, rainfall hits the ground directly and runs quickly into nearby streams. This results in less purification of the water, as well as higher peak flows and reduced flows during dry periods.

Brett, Mueller, and Arhonditsis (2005) studied the value of forests for recycling and removing nutrients: "The loss of forested cover from urbanization minimizes the recycling and removal of inorganic nutrients (particularly nitrogen), due to the reduction in the microbial and vegetative processes that immobilize nutrients in forest litter and soils (Wahl and others, 1997, cited in Brett et al. [2005]). Despite having a watershed only one-third the size of the forested catchment, Wahl

and others (1997) found an urbanized creek's soluble reactive phosphorus (SRP) load was nearly five times greater than that for an adjacent forested creek due to both higher runoff volume and higher stream water SRP concentrations."

*Oldman River. Adjacent forests have been the focus of intense logging operations in recent years.*

Industrial-scale plantation forestry operations sometimes include the use of pesticides (herbicides, insecticides, fungicides) and fertilizers to encourage the survival and growth of newly planted trees. These compounds, often applied by aerial spray, could have a negative impact on the quality of surface and groundwater, not to mention biodiversity.

### 2.3.4 Recreation

The information, culture, and recreation industries employed about 71,700 Albertans in 2004. The industries are expected to grow by a yearly average of 1.6%, employing 76,700 in 2009 (Alberta Learning Information Service 2007).

*Hikers in the Upper Oldman, with clearcut patches visible in the background*

According to Alberta's 2005 budget, Albertans spent an average of $1,400 per year per household on recreation (Government of Alberta 2005). As the population in southern Alberta

increases, this is likely to become a more significant factor. Increased outdoor recreation should also lead to a healthier population, which in turn would have appreciable (positive) financial implications.

### 2.3.5 Wildlife

Industrial-scale logging is also likely to have a negative effect on some wildlife populations. Although it is sometimes argued that clearcut areas represent improved habitat for animals such as grizzly bears, any improvement is considerably outweighed by the effects of greatly increased motorized access that comes with the forestry operations.

For example, in his 2006 review of the draft Alberta Grizzly Bear Recovery Plan, Yellowstone scientist Dr. Charles Schwartz discussed the impacts of forest harvest on wildlife with resulting increases in mortality risk and habitat displacement by increasing human access due to road building. Schwartz emphasizes the need for effective access management after completion of the forest harvest. "The increased mortality risk and displacement resulting from access can effectively negate any increase in food plant diversity."

*Grizzly bear. Clearcut forestry eventually provides good grizzly habitat, but this is outweighed by the increased mortality that comes with higher road density.*

Dr. Schwartz also questions the accuracy of claims that clearcut forests provide better habitat than "unmanaged" forests (Schwartz 2006).

There is some debate as to whether cougars are positively or negatively impacted by clearcut forestry. Some scientists believe that the increased populations of whitetail deer that come with forestry operations benefit cougars; others argue that the open spaces of clearcuts do not allow cougars to adopt their preferred hunting tactics of using ground cover to stalk their prey (Kyle Knopff, pers. comm.).

### 2.3.6 Sport Fisheries

Provincially, "recreational fishing contributed more than $350 million to Alberta's economy in 2000 … and commercial fishing is regarded as a $5 million-per-year industry" (Alberta SRD 2007). Haxby and Prather (2003) estimate the value of water for recreational fishing in the South Saskatchewan River basin at $15,444,030.

*Cutthroat trout, a coveted sport fishing species in the Livingstone River*

Industrial-scale forestry has the potential to reduce the value of Alberta's fisheries through damage to habitat, particularly spawning grounds, through sedimentation and increased access to headwaters. Forest streams contain important spawning grounds for many fish species.

### 2.3.7 Old-Growth Forests

Unfortunately, industrial forestry practices put little value on preservation of old-growth forests. In fact, plans such as the draft C5 Forest Management Plan still target old-growth forest for extraction. There is little provision for maintaining existing stands of old-growth forest, including high-altitude ecosystems. Old-growth forests are known to be important for biodiversity and critical for a number of species, including pileated and three-toed woodpeckers (Alberta Sustainable Resource Development 2005b).

*AWA staff measuring old-growth Douglas fir in the Porcupine Hills*

Sheppard et al. (2002) estimate that in the Castle-Carbondale area, old growth historically made up approximately one-third of the forest. By 2000, old growth was down to 8.9% of the region (Timoney 2002, cited in Arc Wildlife Services 2004), and this percentage has likely been reduced further since then.

### 2.3.8 Stumpage/Protection Charges

For many years the fees that the Alberta government has charged to forestry companies to allow them to harvest trees from our public lands have been well below the national and international averages. However, obtaining actual statistics on this issue is not easy. Issues of company confidentiality and different fees in different regions are cited as reasons for denying the public access to this information, and it may be necessary to resort to freedom-of-information legislation to obtain more current figures. The issue of stumpage/protection charges being set at rates so low that the primary beneficiary is the forestry company needs to be considered in light of the significant cost in reduced revenues to the people of Alberta.

The Alberta Forest Products Association reported that stumpage/protection charges in Alberta as a whole were $71.4 million in 2001. The stumpage/protection charges for Calgary and southern Alberta were $6.1 million in 2001 (Alberta Forest Products Association 2001).

In the Spray Lake Sawmills 2001 FMA, the "holding charges and forest protection charges" were set at $0.15 per cubic metre of the Annual Allowable Cut, with charges to be adjusted annually. This fee rises to $0.20 per cubic metre in 2006 and subsequently, "for the years 2007 to 2011, the holding charges and forest protection charges will be increased by $0.13 per cubic metre of the annual allowable cut" (Government of Alberta, 2001b).

In 1995, B.C. forest companies paid more than $6 billion to the provincial government. In comparison, the payments in Alberta for 1995 were $46 million, rising to $142 million in 2004 (National Forestry Database Program 2006).

The *Calgary Herald* reported that "a reformed system of land tenure, the method by which companies pay royalties for timber they harvest from public land, came into effect January 1. Tied to commodity market prices and production costs, the province views this as a large step towards keeping Alberta's forestry companies competitive" (Marck 2006a).

# 3. ALTERNATIVES TO CURRENT FOREST MANAGEMENT IN ALBERTA

## 3.1 POSSIBLE ALTERNATIVES

### 3.1.1 Sustainable Forests

The primary management policy for Alberta's forests appears to be the provision of a sustainable supply of timber. AWA is of the opinion that the central question should be: how can Alberta best manage these forests to preserve biodiversity and long-term sustainability of the forest resource, and most importantly, the forest ecosystem?

One tool that a progressive forestry company could use in marginal forestry areas is sustainable forest certification. More and more consumers are demanding wood products from sustainably managed forests, and this has led to a growing interest in sustainable forest management. This would certainly seem to be more appropriate in the forests of Alberta's Southern Eastern Slopes, which are so important for their many non-timber values.

The Forest Stewardship Council (FSC) certification scheme has the independent, international respectability that other industry certification schemes in use in Alberta – such as the Canadian Standards Association's Sustainable Forest Management (CSA-SFM) and the Sustainable Forestry Initiative (SFI) – do not.

FSC standards state that "forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest" (Forest Stewardship Council 2000). FSC is an international, non-governmental and multi-stakeholder-governed organization that receives 85% of its funding from independent, philanthropic foundations, with substantial in-kind contributions from conservation organizations. Its standards are refined through both national and regional processes, and are set through a balanced representation of economic, environmental, social, and aboriginal chambers.

In the U.S., major companies such as Home Depot are sourcing increasing quantities of wood and paper products from FSC-certified forests, principally in response to consumer demand. In December 2006, Limited Brands, parent company of Victoria's Secret, announced that they would no longer use suppliers who source paper from any caribou habitat range in Canada unless it has been certified by the Forest Stewardship Council. Limited Brands committed to a "commitment to Forest Stewardship Council (FSC) certification, the only credible certification for sustainable logging" (Limited Brands, 2006).

Appreciable changes, however, would be required in land management practices in Alberta's Southern Eastern Slopes before FSC certification could be achieved. The two main problems have been identified as the "lack of a scientifically-defensible protected areas network in Alberta" and "the inability of Alberta's forest industry to manage forests for ecological sustainability due to the activities of Alberta's petroleum industry" (AWA et al. 2001).

### 3.1.2 Protected Land

Protection is a tool for managing land in a more sensitive manner. Environmental groups in Alberta have tended to focus on protection as the most appropriate method for achieving higher standards of management, but it is important to remember that protection is not the end in itself, but a tool to achieve an end.

In the 2004 Alberta Recreation Survey, 88.9% of Albertans agreed that the statement "parks and open spaces preserve Alberta's landscapes, plants and animals" is "important" or "very important" (Alberta Community Development 2004).

### 3.1.3 Community Forests

Realization is growing in Alberta that the forests of the Southern Eastern Slopes have more to offer than a sustained supply of timber. Forest management that better represents the interests of local communities, including recreation opportunities and a clean supply of water, have been adopted in other jurisdictions.

The *Wall Street Journal* suggested that "Canadian timber tenures allow companies, non-profit organizations and communities to manage forests for a variety of goals. Although the majority of tenures are held by large, industrial forest companies, a growing number of them are held by community organizations and indigenous groups" (Berry 2006).

The villages of Harrop and Procter in southeastern British Columbia are suggested as a good example of a Community Forest Agreement. "Since the mid-1970s the communities have tried to protect the forests around them, partly because the nearby Crown forest is the main source of the towns' agricultural and domestic water. Residents rely largely on untreated surface water, and they fear industrial logging could end up forcing the community to invest in expensive chlorination and filtration systems. In addition, the community wants to protect wildlife as well as scenic views" (Berry 2006).

"In 1999 Harrop-Procter received a Community Forest Pilot Agreement controlling some 27,000 acres of Crown forests and formed a co-op to take over forest operations and economic development. The co-op's first priority in forest management is protection of the community's drinking water. To work toward this goal, Harrop-Procter has successfully negotiated with the provincial government to reduce logging intensity in their area, thereby reducing impacts on the watershed" (Berry 2006).

"Because Harrop-Procter does not intend to maximize returns from timber, it looks for other ways to generate revenue from the forestland. It is the only timber tenure holder in British Columbia that is actively marketing non-timber forest products and one of the few that sell 'value-added' wood products. Every effort is made to use ecosystem-based forestry techniques and to process forest products locally" (Berry 2006).

### 3.1.4 Value-Added Forestry Products

Canada is the biggest exporter of pulp, accounting for 30% of the entire world export market, which is described by Toby Heaps, editor of *Corporate Knights* magazine, as a "paupers' game"

(Heaps 2006). Alberta in particular is an exporter of raw wood products; there is considerable scope for increasing the value-added wood manufacturing industry, which contributes considerably more to the Alberta economy (in terms of jobs and income) than the logging and paper-manufacturing sectors. Between 1995 and 2004, the low value-added paper manufacturing sector lost 18,100 jobs in Canada; logging operations lost 19,700. In the same time period, the value-added wood product manufacturing sector grew by 53,600 jobs to 185,800 (Heaps 2006).

Heaps points out that there is a supply shortage for value-added forestry products certified as sustainable: "The bulk of the globe's major retailers of forest products (Home Depot, Ikea, Lowe's) have stated public procurement preferences for products that have a chain of custody leading back to sustainably certified forests. Home Depot however is afraid to even advertise its Forest Stewardship Council (FSC) certified product line, because the supply is not there." Combining value-added forestry with attempts to meet the demand for genuine sustainably produced timber products could be a tremendous economic boost to Alberta (Heaps 2006).

### 3.1.5 Non-Timber Forest Products

The traditional Non-Timber Forest Product (NTFP) industry has been estimated to contribute as much as $1 billion annually to the Canadian economy (Canadian Council of Forest Ministers 2005). NTFPs exclude classical timber and pulp or paper products, as well as value-added products from these sectors. They include wild edible foods, such as berries and honey; landscape and garden products; and even non-consumptive products such as carbon credits and biodiversity.

| FBF Commodity | Output in tonnes or litres (000) | Current economic value (000$) |
|---|---|---|
| Honey | 37,072 | 160,805 |
| Tree saps | 34,761 | 163,968 |
| Berries | 149,373 | 278,654 |
| Mushrooms | 1 | 43,000 |
| Understorey plants | 2 | 75,321 |
| Wild rice | 1,013 | 3,492 |
| *Total* | | *725,240* |

***Table 5.*** *Estimated current output of forest-based foods in the Canadian economy (Canadian Council of Forest Ministers 2005)*

Clearly all of these products would not be obtainable from the forests of Alberta's Southern Eastern Slopes, but these figures do give some indication of the potential for NTFPs.

### 3.1.6 Priority Land Use

The concept of priority land use (PLU) is gathering momentum in Alberta. Though not clearly defined, PLU is based on the concept that areas of the province, or indeed the province in its entirety, can be zoned, each area with its own identified priority land use, such as resource

extraction, recreation, or water production. Other uses, though not necessarily prohibited in these areas, would be secondary.

Looking at the forests of Alberta's Southern Eastern Slopes, the question arises: should this area be managed with the priority of producing a sustained supply of timber or with the priority of providing clean water for the communities downstream? The 1984 Policy for Resource Management on the Eastern Slopes states that "the highest priority in the overall management of the Eastern Slopes is placed on watershed management," which would suggest that this priority has already been set. This would appear to conflict with priorities stated in plans such as the draft C5 Forest Management Plan, which include managing the forest "in a manner that supports opportunities to sustain or enhance forest productivity" (Alberta Sustainable Resource Development 2005b).

## 3.2 Economic Benefits of Alternatives to Current Forest Management

All of the values of healthy forests mentioned above can be enhanced by management that emphasizes the value of the whole forest and not just the timber contained within.

### 3.2.1 Watershed Protection

New York is an excellent example of a city that has embraced protection of its forested watersheds as an economically viable option. In the late 1990s, faced with the prospect of having to construct a new filtration plant, at a cost of US$6-8 billion, the city started to look at alternatives, principally better management of its watershed catchment areas. The premise of this program was that the city of New York received a substantial economic benefit (in clean water) for a well-managed watershed and should be prepared to pay for this service (Dudley & Stolton 2003).

The city's watershed program included a number of initiatives, including land acquisition, management programs, and compensation for forestry companies and dairy operators. In place of the predicted US$6-8 billion to build the filtration plant, plus an annual US$3-5 billion operating costs over 10 years, the city's alternative watershed program was expected to cost US$1-1.5 billion over ten years (Dudley & Stolton 2003).

Canadian cities, including Vancouver and Prince George, have begun to adopt similar measures to protect their water supplies at source. Arguably, this should be even more urgent an issue in Alberta's Eastern Slopes, which supply water to communities across three provinces. An estimated 85% of the water from the entire Saskatchewan River basin originates in Alberta's mountains and foothills (Dudley & Stolton 2003).

In their research report for the World Bank and WWF Alliance for Forest Conservation and Sustainable Use, Dudley and Stolton write:

"Well managed natural forests provide benefits to urban populations in terms of high quality drinking water:

- Well managed natural forests almost always provide higher quality water, with less sediment and fewer pollutants, than water from other catchments
- Impacts of forests on security of supply or mitigating flooding are less certain although forests can reduce floods at a local headwater scale
- As a result of these various benefits, natural forests are being protected to maintain high quality water supplies to cities
- Protection within watersheds also provides benefits in terms of biodiversity conservation, recreational, social and economic values

However, care is needed to ensure that the rural populations living in watersheds are not disadvantaged in the process of protection or management for water quality."

### 3.2.2 Protected land

In a recent analysis, "Waterton-Glacier International Peace Park: The economic implications of expanding into the Flathead Region of B.C.," economist Jim Johnson reviewed the proposed expansion of Waterton-Glacier International Peace Park into southern B.C. and compared the economic benefits of protected land compared with a resource extraction-based economy. The report concludes that "the economic benefits associated with the park expansion far outweigh the economic costs" (Johnson 2005).

According to Johnson, protected land can benefit local economies in a number of ways:

- "Parks attract outdoor enthusiasts who spend money not only within the park itself but also in the region on such items as accommodation, food and restaurants, rental equipment, and small business outdoor services such as outdoor guiding.
- Parks require a level of annual upkeep and maintenance that generates jobs and high-quality incomes in the region…
- A (provincial) park acts as a natural marketing focus for the area and often the region benefits from marketing by Federal and/or Provincial Parks Departments."

The report also notes that "over the long term, the benefits from the park expansion would continue to accrue annually, while most of the costs would not" (Johnson 2005).

Any costs to the local timber company could be compensated by investing approximately $15 million from public and private sources in upgrading a nearby timber mill to improve production efficiency there. Even with this cost included, the proposed park expansion would still provide a net economic benefit.

It should be noted that in the Flathead region, oil and gas activity was not a major economic factor, which is not the case in southwestern Alberta.

"Over the last twenty years the economies of Elk Valley communities, which are the closest communities to the proposed park expansion, have significantly under-performed compared to the economy of British Columbia as a whole. In contrast, Invermere, a town in southeastern B.C. equally as dependent on natural resource extraction in the early 1980s, but which is near protected natural amenities, outperformed the province during the 1990s" (Johnson 2005).

**Protected Areas and Watersheds**
In a research report for the World Bank and WWF Alliance for Forest Conservation and Sustainable Use, Nigel Dudley and Susan Stolton write:

"The watershed benefits of forest protected areas could help to pay for protection:
- The economic value of watersheds is almost always under-estimated or unrecognized
- It is possible to collect user fees from people and companies benefiting from drinking water to help pay for the catchment protection benefits provided by protected area management – although only in certain circumstances
- Payment for water services can also be one important way of helping negotiations with people living in or using watersheds to develop land-use mosaics that are conducive to maintaining high quality drinking water supplies." (Dudley & Stolton 2003)

### 3.2.3 Economic Diversification
Increased diversity of forest management practices can produce increased economic certainty and a reduced reliance on a single industry that is likely to go through "boom and bust" cycles.

In a recent *Calgary Herald* article, Paul Marck notes that international consulting firm PricewaterhouseCoopers, studying forestry profitability of 24 regions around the world, ranked Alberta first overall in 2002 and fourth in 2004. But "the record profits of only a year ago have submerged into a tide of red ink the last seven months." Similarly, in December 2005, the Alberta Forest Products Association warned of "looming consolidation and rationalization" for the industry in 2006, after total value of products for the first nine months of 2005 declined by $550.4 million to $2.88 billion from the previous year" (Marck 2006b).

Tony Heaps, editor of *Corporate Knights* magazine, writes: "The forest sector's workforce is getting over the hill with an average age of 40 years, more than a third of them 45 or older. Put that against a backdrop of a 27 percent decline in enrolment in undergraduate forestry programs over the last four years. This decline has been linked to an outdated image of the industry as a low-tech, cyclical employer, environmentally irresponsible, and even mills are viewed as unappealing workplaces" (Heaps 2006).

## 3.3 Economic Costs of Alternatives to Current Forest Management

Attempts to put limitations on industrial forestry activity are often vigorously opposed because of the perceived threats to jobs, particularly in communities that are heavily reliant on this one industry.

The Alberta Forest Products Association (2001) suggests that there are 12 Alberta communities that rely completely on forestry for their livelihood (including Blairmore), and a further 50 where forestry is the prime sector (including Canmore). Whether reduced industrialization would be a benefit or a cost to these communities is a matter for debate. Increasing industrialization and mechanization of forestry operations leads to an increased reliance on machinery and a reduction in jobs, as demonstrated by the following graph from Global Forest Watch (2000).

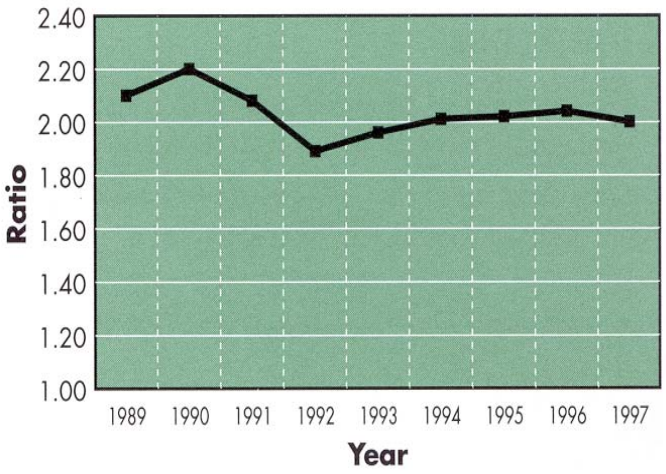



***Table 6.*** *Jobs per 1,000 $m^3$ of harvested timber, 1989-1997 (Global Forest Watch 2000)*

# 4. OTHER CONSIDERATIONS

## Growing population in Alberta

In his research paper "The Eastern Slopes: Alberta's Best Water Keeper," Dr. David Schindler reports that Alberta's population has increased 44-fold since 1901. The population will continue to rise into the twenty-first century, and this will clearly lead to increasing pressure on natural resources, including water and wildlife (Schindler 2006).

## Climate change

Most climate scientists suggest that the climate in Alberta is likely to get warmer and drier in the coming years. Alberta's leading water specialist recently observed that the twentieth century was the wettest century in Alberta in the previous two millennia. There will likely be considerable fluctuations in climate from year to year, but overall increased temperatures will lead to increased evaporation, and summer river flows are likely to decline. Winter snow packs will also become greatly reduced, exacerbating low summer river flows (Schindler 2006).

## Mountain Pine Beetle

Studies in B.C. are also beginning to look at the long-term effects of mountain pine beetle (MPB) outbreaks on the water table. In the Vanderhoof Forest District, for example, groundwater levels have reportedly risen in MPB-affected areas, requiring shifts in forestry practices, including use of low ground pressure harvesting equipment and shifts from summer to winter harvesting (Forrex 2006).

## Softwood Lumber

The softwood lumber dispute between Canada and the U.S. was an issue for several years. The U.S. accused Canada of subsidizing its forestry industry: Alberta's low stumpage fees would appear to bear this out. "The softwood lumber dispute with the U.S. … has drained over $5 billion from the Canadian companies' coffers over the past few years, not an insignificant sum when you consider the total net income of the entire forestry sector in 2004 was $1.1 billion" (Heaps 2006).

In 2004, the U.S. Department of Commerce collected US$3 billion in duties, $370 million of which was from Alberta (Alberta Forest Products Association 2001). In 2006, the Canadian government announced $1.2 billion in aid for the Canadian lumber industry (CBC 2006).

## Information

Information about the economics of forest operations is extremely difficult to establish. It may be necessary to use freedom-of-information legislation to obtain information. Forestry companies can also be also reluctant to divulge information that may be commercially valuable.

Inconsistent language used in different measurements of the forest industry also makes it difficult to compare figures and reports. Some reports refer to primary forestry and secondary manufacturing sectors; others refer to direct and indirect as well as induced revenue from forestry. A detailed understanding of forestry economics is required to analyze these figures in a meaningful way.

**Cumulative Effects**

Forestry is also clearly not the only industrial use of this region of southern Alberta, and it is important not to look at one industry in isolation without considering interaction with other industries. Oil and gas activity is prevalent throughout the region and undoubtedly has a major effect on water, wildlife, and recreation opportunities, particularly through roads and cut lines. It is not easy to separate these effects from those of the forestry industry. Similarly, mining may become an increasing issue in this region in the future, and grazing is another major use that impacts some areas. The impact of cumulative effects from all users must be considered.

*Oil well, Elbow Valley*

## 5. CONCLUSION

Alberta Wilderness Association is calling for a full, independent comprehensive review of forestry in southern Alberta. There is an urgent need for such a study to review all aspects of forestry operations, including subsidies to the forestry industry (which includes low stumpage fees paid by forestry companies in Alberta compared to other jurisdictions), and the costs of fighting forest fires and dealing with forest pests such as mountain pine beetle.

AWA believes that it is time for a "culture shift" in the way we view our forests. For too long the forests of Alberta's Southern Eastern Slopes have been managed principally to produce a sustained supply of timber, and the many other essential values of healthy functioning forests have been overlooked. Government initiatives such as the Land-use Framework or Integrated Land Management may or may not be the tools which allow us to weigh up these different values – which include wildlife habitat, recreation opportunities, clean water and clean air – and to decide which should take priority. Albertans are increasingly becoming aware that the non-forestry values of our forests may be considerably more important than the value of timber production.

*New growth from old…*

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# APPENDIX 1: AWA POSITION STATEMENT

## ALBERTA'S FORESTS

**August 2003**

**Position**

AWA is committed to maintaining healthy and intact forest ecosystems that will sustain biological diversity and viable wildlife populations, provide clean drinking water and promote long-term economic opportunities. AWA supports responsible ecosystem-based forest management that does not compromise wildlife and wilderness values.

**Points of Emphasis**

The recommendations of the *Alberta Forest Conservation Strategy Committee* (AFCS), *National Forest Strategy* and *Canada Forest Accord*, including the goals and objectives they articulate, provide a framework for truly sustainable forest management.

Alberta's remaining old growth forests are non-renewable and necessary for the preservation of biological diversity.

Water quality and quantity are recognized as key products of all forests and a primary product of the Eastern Slopes watersheds.

Industrial scale clearcut logging (including salvage logging) must be eliminated in the Wild Spaces delineated on AWA's *Wild Alberta* map, in Zones 1 and 2 of the Eastern Slopes, in Environmentally Significant Areas (ESAs) or the entire Eastern Slopes south of the Trans Canada Highway.

Alberta pulp mills must strive to reduce pollution and ultimately become zero-discharge. This will involve eliminating chlorine and other toxins from the production process.

Value-added forestry activities that support local employment and sustainable economic opportunities must be developed.

Harvest volume must consider all non-timber land uses and be substantially lower than the long-term sustained yield of the forest ecosystem.

Pesticides should be phased out leading to elimination.

Intensive plantation management and agroforestry are viable options within existing private farmlands of marginal productivity. The purpose of such intensive management is to provide additional timber yields so as to reduce the pressure on natural forests.

Fire plays an essential role in maintaining healthy forest ecosystems. Clearcutting does not emulate wildfire.

In the absence of risk to lives or properties, fire suppression should not be applied to wildfires events occurring in the Wild Spaces delineated on AWA's *Wild Alberta* map, in Zones 1 and 2 of the Eastern Slopes, in Environmentally Significant Areas (ESAs), the entire Eastern Slopes south of the Trans Canada Highway or areas of uneconomical timber.

Forest management must maintain remoteness and minimize forest fragmentation through road building and clearcutting.

Forest Management Plans must include a credible consultative process with local Aboriginal communities and be consistent with traditional Aboriginal land values and practices.
Comprehensive forest monitoring by our public agencies is required to credibly assess the cumulative impacts of current and past industrial activities within forest regions. A section of the forest agency must be designated for the monitoring and management of watersheds.
Meaningful public input is necessary for all aspects of the forest management process in Alberta.
All aspects of forest management must be based on the precautionary principle.
Sustainable forest management is only possible through proper regulations and enforcement, included adequate civil service staffing.
A dynamic, scientific and independent forest management review and monitoring system must be applied to all large-scale industrial forest developments. These include new forest management agreements and renewals, as well as forest development plans.
The Forest Stewardship Council and the development of National Standards for the Boreal Forest will set a higher standard for improving forest management.

## BACKGROUND

### Alberta Forest Conservation Strategy

The Alberta Forest Conservation Strategy (AFCS) was the product of a broad representation of interest groups and is considered the best available guide to the vision and goals held by Albertans regarding public forests. One of the fundamental principles of the AFCS is that forest ecosystem health must be maintained if we are to continue to receive benefits from forest ecosystems. To maintain ecosystem health the AFCS recommends "that the Government of Alberta and forest users adopt and implement ecosystem-based forest management as quickly as practicable." (AFCSSC, 1997). The government, however, never released the AFCS as drafted by the committee. In its place the government released policy documents, such as *The Alberta Forest Legacy*, that included statements about sustainability, but were devoid of actual commitment to change (Schneider, 2001).

### National Forest Strategy

AWA supports the themes and objectives outlined in the National Forest Strategy 2003-2008 (National Forest Strategy Coalition, 2003):
Manage Canada's natural forest using an ecosystem-based approach that maintains forest health, structure, functions, composition and biodiversity.
Develop legislation and policies to improve the sustainability (social, environmental and economic) of forest-based communities.
Accommodate Aboriginal and treaty rights in the sustainable use of the forest recognizing the historical and legal position of Aboriginal Peoples and their fundamental connection to the ecosystem.
Stimulate the diversification of markets, forest products and services and benefits (both timber and non-timber).
Maintain and enhance the skills and knowledge of forest practitioners and mobilize the broader Canadian knowledge community to establish a new forest innovation agenda for Canada.

Actively engage Canadians in sustaining the diversity of benefits underlying the importance of Canada's forest.
Increase the economic, social and environmental contribution by Canadian woodlot owners to Canadian society through a concerted effort by stakeholders to strengthen policies and services that encourage and support viable woodlot businesses.
Create a comprehensive national forest reporting system that consolidates data, information and knowledge for all valued features of the forest, both urban and rural.

**Old-Growth Forests**
The underlining feature of old-growth forests is not age per se, but the set of characteristics shared by most forest types in the later stages of succession. A key feature of an old-growth forest is the breakup of the canopy due to mortality of individual trees as they reach maturity. This process leads to the release of understory plants, accumulation of snags and downed logs, and in some cases, the emergence of secondary canopy species. Relative to younger stages, old-growth stands have trees of many ages and sizes, and have more numerous large canopy trees, large snags and large downed logs. Overall, structural diversity is highest in old-growth, and this is reflected in unique plant and animal communities as well as high overall species richness relative to younger stands (Schneider 2002). Additional attributes often associated with old-growth forests include:
Trees showing dieback, major side branches, multiple tops, scars and conks;
Tip-up mounds;
Thick forest floor (LFH);
Abundance of obligate and facultative cavity-using animals;
Abundant epiphytic lichens;
High cover and diversity of fungi;
Large amounts of stored carbon;
Fire-scarred trees;
Detrital food webs;
Mycotrophic dependencies of vascular plants;
Fungal-invertebrate and fungal-invertebrate-vertebrate relationships (Timoney, 1998).

In Alberta there are no requirements for maintaining old growth on the landscape. In fact, the Alberta operating ground rules encourage forest managers to cut the oldest trees first (Alberta Environment Protection, 1994). As a result, old-growth forests in Alberta are disappearing at a rapid rate (Timoney, 1998).

Non-timber values of old-growth forest must be explicitly recognized and incorporated into an old-growth forest strategy for Alberta.

**Endangered Forests**
The term Endangered Forests (EF) was coined by international environmental groups to create a consistent terminology when performing markets research/action and dealing with wood product retailers. The EF concept is a work in progress and consists of a set of definitions to guide wood product purchasers. There are currently four types of EF:
Naturally rare forests;

Anthropogenically rare forests;
Intact (frontier or near-frontier) forests;
Other ecologically important forests.

Endangered forests should be protected, as they are rare, threatened, ecologically vulnerable, and are of global biological and cultural significance. Logging and many other unsustainable commercial activities will cause irreversible damage to their conservation value. For more information, an Endangered Forests Definition Document can be viewed at www.ForestEthics.org.

**High Conservation Value Forests**
High Conservation Value Forests (HCVF) are those forests with outstanding or critical biological, environmental or social values. First defined by the Forest Stewardship Council (FSC) and included in their Principles and Criteria, the term has gained increasing support and is now widely discussed and used by NGOs, industry and governments around the world. HCFV comprise the crucial forest areas and values that need to be maintained or enhanced in a landscape. HCVF are found across broad forest biomes, within a wide range of forest conditions (largely intact to largely fragmented) and in ecoregions with complete or under-represented protected area network. For more information on HCVF can be found at http://www.panda.org/

**Water and Watershed Management**
Four of Canada's great rivers originate from the Eastern Slopes of Alberta's Rocky Mountains – the Peace River, Athabasca River, North Saskatchewan River and South Saskatchewan River. Many documents, including some written prior to 1930 when Alberta gained control over its forests, attest to the fact that watershed protection has been the priority for Alberta's Eastern Slopes forest. The production in perpetuity of an even flowing supply of high quality water has been seen as the traditional priority of the Eastern Slopes. A Policy for Resource Management of the Eastern Slopes (1979) and the revised edition (1984) restated this value and purpose.

Healthy forest ecosystems play a critical role in ensuring high water quality and quantity. This is particularly true for headwaters. Forest elements such as soils, understory vegetation and dead wood store water during periods of high precipitation and slowly releases it when conditions are dry. In the same process, these forest elements filter the water, improving its quality. By removing these essential forest elements, clear-cut logging hinders the landscape's ability to filter, store and slowly release water. Throughout North America, municipalities have recognized the importance of watershed integrity in providing a steady supply of quality drink water. Some municipalities, including New York and Vancouver, have purchased lands in their watersheds to retain the critical forest elements and protect the water supply. In contrast, the headwaters of Calgary's water supply have been included within a Forest Management Agreement recently granted by the Alberta government.

**Ecosystem-based Forest Management**
Ecosystem-based planning should be the first priority of forest managers. The key elements of ecosystem-based forest management include harvesting practices that emulate natural

disturbances, adaptive management, ecological benchmarks, public involvement and application of the precautionary principle (Schneider, 2001). Ecosystem-based planning ensures:
An adequate system of parks and protected areas;
Ecologically appropriate harvest levels;
Retention of critical wildlife habitat;
Recognition of Aboriginal rights;
Equally distributed benefits to the community.

An ecosystem-based plan is a strategy for forest landscape planning that makes ecological sustainability the primary management goal. The vision is consistent with other Canadian environmental non-governmental organizations (Plotkin and Henschel, 2002) and the Alberta Conservation Forest Strategy (AFCSSC, 1997).
Allowable Annual Cut
**Methods of calculating the rate of cut should place more emphasis on environmental protection and less on ensuring a stable flow of wood fiber to mills. The process for determining the rate of cut should focus on maintaining the ecological integrity of the forest. The level of harvest volume should consider all non-timber land uses and be substantially below the long-term sustained yield of the forest ecosystem.**

In Alberta, a number of studies (Pembina Institute, 2000; Timoney and Lee, 2001) demonstrate that more timber is being liquidated than is being replenished by natural growth and regeneration. Such unsustainable practices are in contravention to Alberta's *Forest Act*, which states that forests allocated under Forest Management Agreements are to be managed on the basis of perpetual sustained yield. The Alberta Reforestation Standards Science Council prepared a report for the Government of Alberta on regeneration standards and noted, "a critical shortcoming of the standards is their failure to be linked to any model forecasting the growth and yield of regenerated stands" (Alberta Reforestation Standards Science Council, 2001). Such weak linkages to growth and yield estimations leave the province and forest industry vulnerable to challenges that the forest volume production is not being sustained after cutting. It is also possible to salvage-log stands that contain a large volume of commercial wood without a commitment to regenerate the stands. Thus forest volume may not be sustained after cutting.

**Forest Harvesting Practices**
Forestry practices must ensure that the critical characteristics of the forest ecosystem are not altered by resource extraction. This can be accomplished at the forest stand level by maintaining or restoring natural structures such as trees used by wildlife, standing dead trees (snags), residual individual live trees and tree patches, and coarse woody debris (fallen branches, logs, etc.) in sufficient quantities and distribution to fulfill their functions within the ecosystem. Harvesting techniques and equipment that maintain the ecological integrity of the forest and that minimize habitat loss should be employed.

**Pesticide Use**
Pesticide use should be phased out. There is increasing concern over the use of pesticides in forest management, due to both the environmental impacts of the chemicals used and the danger their use poses to forest workers and other people using the forest. Alternative harvesting

methods should be adopted to reduce the need for tending of regenerating forest areas and pesticide use.

**Wildfire vs. Clearcutting**

The occurrence of wildfire is essential to the survival of Alberta's forests. Without them, the existing mosaic of many-aged and multi-species stands would not exist. The results of clearcut logging and wildfire may resemble each other to the untrained eyed. In fact, both almost always result in the regeneration of a new forest; the problem is that they do not always regenerate to the same type of forest. Fire encourages the growth of conifer species, as heat stimulates cone opening, reduces competition from hardwoods and ensures natural seed supply. Clearcutting, on the other hand, stimulates shade-intolerant hardwoods by creating full sunlight conditions with heating. Thus clearcutting supports species conversion of forests. Another major difference between clearcutting and fire is that numerous standing dead trees usually remain after a fire. These dead trees reduce wind velocity, offer partial shade and provide habitat for numerous species. With clearcutting, more material leaves the site to be transformed into lumber, pulp and paper. Unlike fire, logging requires roads that bring many impacts, including a change in behaviour of some species and greater pressure from hunting and fishing (Chaundy and Gray, Date Unknown).

**Salvage Logging**

Current Alberta Government forest policies encourage quick clear-cut harvesting of all merchantable trees left after a fire. Such policies ignore the importance of standing dead timber in terms of maintaining forest species and overall ecosystem processes. Many species, often termed fire specialists, thrive in the charred remains of a forest fire. For example, recent research in Alberta's boreal forests indicates that burned sites and the food sources present within them (i.e. bark beetles) are critical to the survival of the black-backed (*Picoides arcticus*) and three-toe woodpecker (*Picoides tridactylus*) (Hoyt and Hannon, 2002). Feeding activities by such wildlife create holes in dead and dying trees that promote the presence of fungi and decomposing bacteria. Together these species hasten the breakdown of nutrients from the burned stands and cycle them back into the developing forest.

Even during severe fire events, remnants of intact forest may survive. These islands of unburned trees act as a refuge for species of bacteria, fungi, plants and animals that later recolonize the burn site and replenish the young forest. Unfortunately, salvage logging does not differentiate between dead and living trees. As such these refugia are removed from the landscape along with the burned stands.

**Habitat Fragmentation**

Logging road networks are expanding in Alberta's forest with little consideration of the cumulative impacts on ecosystem function. It is essential that forest managers create and implement access-management plans that include strategies for retaining significant sections of forest areas in a remote condition (i.e. contiguous core forest). Such strategies should maintain remoteness, minimize forest access (including shared access for all industrial activities), prevent road building in candidate protected areas, avoid ecological impacts on protected areas and

candidates from road adjacency, and effectively abandon and decommission roads, bridges and water crossings.

**Aboriginal Peoples**
If forest management is to be socially responsible, it is essential that forest managers fully recognize and respect existing Aboriginal Peoples' rights and title on the land. Aboriginal cultural values associated with forests must be identified, protected and monitored. Opportunities for joint forest-management agreements and Aboriginal participation in forest management must be created. Forest managers must make every reasonable attempt to obtain consent from affected Aboriginal communities and ensure that management practices remain consistent with traditional Aboriginal land-use values and practices.

**Public Participation**
Alberta's forest resources on public land belong to all Albertans. Recommendations resulting from public consultation in 1977-78 (Dancik et. al., 1979) and again in 1989 (Brace et. al., 1990) have bee largely ignored by the Alberta government. Full and meaningful public consultation should take place in all forest management decisions. Relevant information must be provided to the public, and public views must be incorporated into forest management decisions. Full consultation with the public, Aboriginal and local communities should encompass every stage of the forest planning, management and monitoring process.

**Forest Monitoring**
There is a need for credible and comprehensive forest monitoring that accurately assesses the impacts of current and past forestry operations. Credible scientific professionals working independent of industrial influences must conduct all monitoring activities. Effective monitoring requires the use of benchmarks, including protected areas and permanent sample plots, and should include a commitment to measure changes in wildlife habitat use, soil moisture and fertility over time. The collection of accurate growth and yield data for the forest is also a priority. This information should be accessible to the general public without cost.

**AWA Forest Related Projects**

**Forestry in the Southern East Slopes**
Our long-term vision for the southern east slopes of Alberta is to achieve a healthy and intact forest ecosystem that will sustain wildlife populations, provide clean drinking water, and sustain long-term economic opportunities. To achieve this vision, AWA is undertaking a project to promote a phase out of industrial scale logging south of the Trans Canada. A strategy for this project has been drafted.

**Forest Stewardship Council**
The Forest Stewardship Council (FSC) is an international organization that develops standards for well-managed forests through the participation of its four constituent groups: the Aboriginal, economic, environmental and social chambers.

AWA supports the Forest Stewardship Council (FSC) and the development of National Standards for the Boreal Forest. FSC standards must set a high bar for improving forest management to be consistent with AWA's position. AWA will not be bound by FSC if it does not fulfill our aforementioned position. A strong FSC standard is an important component of a boreal forest conservation strategy that includes putting conservation first. It must maintain the health and integrity of our boreal forest, as well as the people and communities that depend on it. More information about FSC can be found at www.fsccanada.org

**Markets Research**

AWA supports the use of market action to encourage the procurement of wood products from sustainably harvested forests. Retailers such as Home Depot, IKEA, and Lowe's have expressed commitments not to purchase wood from Endangered Forests (see www.ForestEthics.org for a discussion of Endangered Forests) and to purchase FSC products when possible. AWA is actively researching where Alberta's wood products are sold. The intent will be to notify retailers who have made Endangered Forest commitments if they are not following their procurement policies. Market campaigning is currently viewed as a powerful tool to influence consumer activity and promote ecosystem-based forest management.

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## APPENDIX 2: PHOTO CREDITS

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